

American Vegetable Grower

MAY • 1960

25 CENTS

VARIETIES • CULTURE • PACKING • MARKETING



Double Your
Cucumber Yield
Growers Try
Paper Mulch
New Ways to Grow
Fireball Tomato

Air-Blast Spraying . . . for Quicker Coverage with Less Water

"Firestones are the best I ever had for field work on cleared land!"



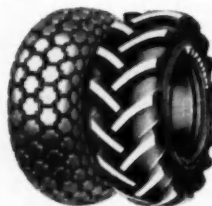
Mr. Johns (left) in a huddle with Firestone representative Jack Brunson.

W. R. Johns, Allendale, S. C., reports, "I just couldn't keep tires on the rear of my pickup—they'd break all the time. Then Jack Brunson, my dealer, sold me some Firestone Super Mileage Lug Tires. They were perfect for our needs and held up longer than I ever expected. Just had them retreaded. Best I ever had!"

Like W. R. Johns, you'll find Firestone truck tires deliver extra service at no extra cost!

- **FIRESTONE RUBBER-X**, the longest wearing rubber ever used in Firestone truck tires, greatly prolongs tread life.
- **FIRESTONE SHOCK-FORTIFIED CORD** gives you built-in stamina, top impact resistance in roughest hauling conditions.
- **FIRESTONE TRANSPORT TIRE**: designed, built for maximum mileage at minimum cost in general farm hauling.
- **FIRESTONE ALL TRACTION TIRE**: improved road mileage leader with top traction for feed lots, soft fields and lanes.
- **FIRESTONE SUPER ALL TRACTION TIRE**: heavy duty, wide, deep tread for traction on highways, in mud or snow.

Extra service at no extra cost—that's the Firestone story over and over again! See your Firestone Dealer or Store about the complete line of Firestone farm tractor and implement tires, too. And remember, Firestone's **FREE NEW TRACTOR TIRE LOANER SERVICE** keeps your equipment working during retreads and repairs.

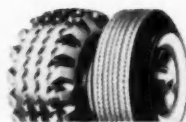


TRACTOR
All Non-Skid*
All Traction
Champion*

SAVE AND BE SURE
with Firestone tires on all wheels!



TRUCK
Champion
Guide Grip*



CAR
All
De Luxe
Champion*

*Firestone T.M.

CONVENIENT TERMS

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1960, The Firestone Tire & Rubber Company



now...use **Thiodan**[®] on all these

Broader registration for Thiodan—powerful new insecticide—gives you effective, economical control of aphids and many other important insects this season.

Thiodan cleans up heavy aphid infestations where other sprays and dusts fail. It outperforms previously available materials; fewer applications give positive, long-lasting control of a wide range of vegetable insect pests.

CROP	TO CONTROL	APPLICATION
Beans	Mexican bean beetle	Up to pod formation
Broccoli Cabbage Cauliflower	Cabbage looper, imported cabbage worm, diamond-back moth larvae	Up to formation of edible parts
Cucumbers Melons Squash	Aphids	Up to 14 days prior to harvest
Eggplants, Peppers	Aphids	Up to 7 days prior to harvest
Potatoes	Flea beetle, Colorado potato beetle, leafhoppers, aphids, southern armyworm, green stink bug, potato tuberworm, leaf-footed plant bug	
Tomatoes	Aphids, whitefly	Up to 7 days prior to harvest

Thiodan[®]

TECHNICAL CHEMICAL DEPT., NIAGARA CHEMICAL DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, MIDDLEPORT, N. Y.



replenish copper-depleted soil



**promotes healthy fruit
and vegetable profits**

The natural and economical way to promote fruit and vegetable profits is to give your crops the protection and nourishment of copper sulfate.

More than 70 years of dependable performance by Triangle Brand Copper Sulfate have eliminated the disease risks you take with fruit and vegetable profits. In spray and dust form, it controls the diseases which attack the foliage and fruit of citrus and nut trees, as well as blight and diseases in vegetable crops (leaf spot, anthracnose, etc.). It acts naturally to replace the copper in the soil.

Triangle Brand Copper Sulfate does other farm jobs, too. It controls farm pond scum and algae. On fence posts, it provides lasting protection against termites and rot.

Send for your free booklet, you'll find it rewarding.



**Phelps Dodge
Refining Corp.**

300 PARK AVENUE
NEW YORK 22, NEW YORK

American Vegetable Grower

Reg. U.S. Pat. Off.
Commercial Vegetable Grower
Market Growers Journal

VOL. 8

No. 5

MAY, 1960



Cover photograph by J. C. Allen & Son
shows spring scene in celery field.

FEATURES

**Less Water, Quicker Coverage with Air-blast
Spraying** 9

By W. C. Handveerk

Applying Plant Food to Your Crop 10

By M. T. Vittum and N. H. Peck

Double Your Cucumber Yield? 12

By S. K. Ries

Growers Try Paper Mulch 18

By N. F. Oebker and J. W. Courter

Plant Grower's Corner 34

By Ray Sheldrake

Greenhouse Crops California Tour 40
By Fred K. Buscher

Melons Nematode Control 32

Tomatoes Tips on Growing Fireball 26
By Philip A. Minges and Clark Nicklow

DEPARTMENTS

Letters to the Editor..... 6	As It Looks to Me..... 22
Markets . . . Trends and Forecasts..... 7	New for You..... 42
State News 14	Editorials 46
You be the Expert..... 14	Coming Next Month..... 46

E. G. K. MEISTER, Publisher

RICHARD T. MEISTER, Editor

Managing Editor, E. K. GOULD. Associate Editors: H. B. TUKEY, ELTON S. BANTA.

Consulting Editors: R. L. CAROLUS, JOHN CAREW, JOHN A. SCHOENEMANN.

Art Director, GEORGE M. ROSS. Production Manager, J. S. BENDER.

EDWARD L. MEISTER, Director of Advertising

District Advertising Offices

NEW YORK: W. J. Martin and Company,
56 W. 45 St. Phone Yukon 6-0636.

SAN FRANCISCO: McDonald-Thompson,
625 Market St. Phone—Yukon 1-2245

NEW JERSEY: W. J. Martin and Company,
612 Bernita St., Rivervale (Westwood
P.O.). Phone—Express 1-2129.

LOS ANGELES: McDonald-Thompson, 3727
West 6th St. Phone—Dunkirk 7-5391.

CHICAGO: Peck and Billingslea, Inc., 185 N.
Wabash. Phone—Dearborn 2-0292.

SEATTLE: McDonald-Thompson, 1008 West-
ern Ave. Phone—Main 3-3766.

AMERICAN VEGETABLE GROWER is published monthly by American Fruit Grower Publishing Co., Willoughby, Ohio. E. G. K. Meister, Publisher and Chairman of the Board; Edward L. Meister, President; Richard T. Meister, General Manager; Gilbert Meister, Vice-President. Subscription price \$1.00 per year in U.S. and possessions; to Canada and other foreign countries \$2.00. Single current copies 25c; copies over one year old 75c.

When changing your address, please send us old as well as new; send address label from your last copy; allow 6 weeks for the first copy to reach your new address.

Entered as second-class matter at Post Office at Willoughby, Ohio, under the Act of March 1879. Additional entry at Mount Morris, Illinois.

Postmaster: Please send change of address "Form 3579" to AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

**FRESHEST
PRODUCE
ON THE
MARKET...**

gets there in boxes of **M/R** corrugated board

Buyers, packers and growers agree: Nothing else gets wet-cooled produce to market in fresher, better condition than boxes of M/R corrugated board. These sturdy, lightweight shipping containers cushion rough handling, insulate more thoroughly,

keep fresh fruit and vegetables cooler longer.

They save money on storage, packing, handling and shipping. Get the facts about M/R corrugated board boxes for shipping produce. See Hinde & Dauch—you stand to save important money.

Hinde & Dauch Division



**West Virginia
Pulp and Paper**

Hinde & Dauch Division, West Virginia Pulp and Paper Company, Sandusky, Ohio • 17 Plants • 42 Sales Offices

MICRONIZED

TRI-BASIC COPPER SULFATE



You get many advantages with copper fungicides — used as spray or dust form on practically all truck crops and many fruits in the control of persistent fungus diseases — TRI-BASIC is compatible with other pesticides and gives the added advantage of correcting nutritional deficiencies where there is insufficient copper in the soil — Tennessee's TRI-BASIC COPPER SULFATE is micronized to give greater covering power — Contains 53% Copper as Metallic.

Insist on  Micronized Tri-Basic Copper Sulfate

For samples or literature, make request on your firm's letterhead.



TENNESSEE CORPORATION

612-629 Grant Building, Atlanta 3, Georgia



LETTERS TO THE EDITOR

Tomato Bargaining Defeat

Dear Editor:

I would like to say a word about your article in the February issue on the tomato bargaining defeat. In my mind there is only one thing for growers to agree and to act on, not only in regard to tomatoes but also many other crops. That is to drastically reduce their acreage and try to avoid a surplus. These tomato growers lost money on their crop and let the canners get another surplus of cheap tomatoes ahead for next year. I feel they would have been better off if they hadn't raised any tomatoes last season. Next season the crop would be short, and they could make up for lost time.

Growers will never make money by having a surplus of fruit or vegetables which they have to sell quickly or lose. Growers here did the same thing with sweet corn last season. They shipped corn, five dozen to the crate, to Boston and New York and some got a return of 20 cents a box after expenses. They plowed under many acres. I don't call this good farming.

Southwick, Mass. Harold Mason

Plant Grower's Corner

Dear Editor:

We just wanted to write to let you know how much we enjoy reading your "Plant Grower's Corner." We always did look forward to getting AMERICAN VEGETABLE GROWER, but your new series seems to be just for us. We are comparative newcomers in the vegetable growing field and are planning to build a greenhouse this spring to grow vegetable plants. So you see, almost anything that you write about in this column will be helpful and of interest to us. Please keep these articles coming as we believe that there are many people who feel the same as we do.

Mr. & Mrs. William Manthey
Detroit, Mich.

CALENDAR OF COMING MEETINGS AND EXHIBITS

May 12—Greenhouse Vegetable Day, Ohio Agricultural Experiment Station, Wooster.

May 24-25—National Produce Executives' Conference, Ambassador East Hotel, Chicago, Ill.

May 29-June 4—Caribbean Region American Society for Horticultural Science annual meeting, Rio Piedras, Puerto Rico.—E. H. Casseres, Sec'y-Treas., Londres 40, Mexico 6, D. F.

June 22-24—Washington Potato Industry annual summer meeting, Holiday Motel, Yakima. Washington Potato and Onion Growers & Shippers Association, 702 Brown Ave., Yakima.

Aug. 2-3—Ohio Pesticide Institute, Ohio Agricultural Experiment Station, Wooster.

Aug. 14-18—South Carolina Farm and Home Week, Clemson College, Clemson.—Thomas W. Morgan, Chairman, Clemson College Extension Service, Clemson.

Sept. 11-14—Produce Packaging Association annual convention and exposition, Americana Hotel, Miami Beach, Fla.—Robert L. Carey, Exec. Sec'y, P. O. Box 29, Newark, Del.

Sept. 27-29—Florida Fruit & Vegetable Association annual convention, Hotel Fontainebleau, Miami Beach.—J. Abney Cox, General Convention Chairman, Princeton.

Oct. 19-20—Western Growers Association annual meeting, Riviera Hotel, Las Vegas, Nev.

Nov. 28-Dec. 1—Vegetable Growers Association of America 52nd annual convention, Milwaukee Auditorium-Arena (Hotel Schroeder, headquarters), Milwaukee, Wis.—Robert M. Frederick, Exec.-Sec'y, 528 Mills Bldg., 17th & Pennsylvania Ave., N.W., Washington 6, D.C.

AMERICAN VEGETABLE GROWER

MARKETS...

TRENDS AND FORECASTS

Special Report

AMERICAN VEGETABLE GROWER, MAY, 1960

INTEGRATION IS INCREASING IN AGRICULTURE. Integration, or contract farming in canning crops, is not new to vegetable growers. However, contracting for fresh vegetables is new and is increasing in importance. The important things for growers to watch in any integration arrangement are: To what extent are decisions made for the grower, and what, if any, are the tie-in arrangements for supplies, etc., used in his production program.

ONION SITUATION SLIGHTLY IMPROVED. But better prices came too late to benefit many storage area growers. The big problem has been overproduction. Oversupply continues from early crop areas. Hybrids and other improved practices have led to high per-acre yields. The number of total acres used for growing onions must be cut so that production can be held in line with demand.

GOOD OR BAD POTATO YEAR COMING UP? It depends. Growers themselves will largely determine this. Present indications don't look good. Intentions-to-plant in the late summer and fall states are 90,000 acres more than USDA suggestions. This could lead to a 2% increase over 1959 production. Past history shows that growers get highest total returns from the smallest national crops and the lowest returns in the biggest production seasons.

DELAYED PLANTING OF EARLY VEGETABLES has occurred in most areas. As a result, early production of many fresh vegetables will be reduced. Less availability of fresh produce may help reduce stocks of processed vegetables.

VEGETABLE CONSUMPTION HAS CHANGED. The average consumer is now using 12% less fresh vegetables and over 50% more in the canned and frozen form compared to 20 years ago. A recent Agricultural Marketing Service study indicates decreases in per capita demand for fresh asparagus, limas, peas, snap beans, tomatoes, cabbage, and spinach. Sweet corn and cucumbers have enjoyed an increase in popularity in the fresh form. Broccoli, snap beans, and tomatoes are now enjoying greater popularity in the processed form.

"PICK-IT-YOURSELF" STRAWBERRY MARKETING. More growers are using this approach to their harvesting and marketing problem. This plan can be advantageous to growers, consumers, and even retailers. Stores usually carry berries as loss-leaders anyway.

ARE U.S. CANNERS LOOKING TO FOREIGN COUNTRIES FOR GROWING AND PROCESSING THEIR PRODUCTS? Indications are that this might be so. A large national food canner has just granted \$25,000 to a leading midwestern university to study climate and related factors concerned with selection of farming areas abroad. Main interest is in South American areas adapted to tomatoes, peas, sweet corn, beans, and tropical fruit.

POTATO CONSUMPTION DECLINE IS LEVELING OFF. The downward trend in per capita potato consumption has been about halted now by increased processing, better quality control, washing, and better merchandising methods. But the consumption rate for sweetpotatoes per person is well below prewar levels and appears to be continuing downward.

FALL POTATO CONTRACTS LOOK ATTRACTIVE. With an expected increase in acreage and lower expected prices next fall, contract prices of around \$2 per hundred for U.S. No. 1 look good. If contracts are available in your area, perhaps you should consider signing up.

ONION FUTURES TRADING OFFICIALLY DEAD. The time period for appeal on the law banning futures trading in onions has expired. Rumor is that grower groups will tackle potatoes next.

HOW TO AVOID RESIDUE PROBLEMS

*With malathion you can spray most fruits
up to 72 hours from harvest without
exceeding residue limits established by law*



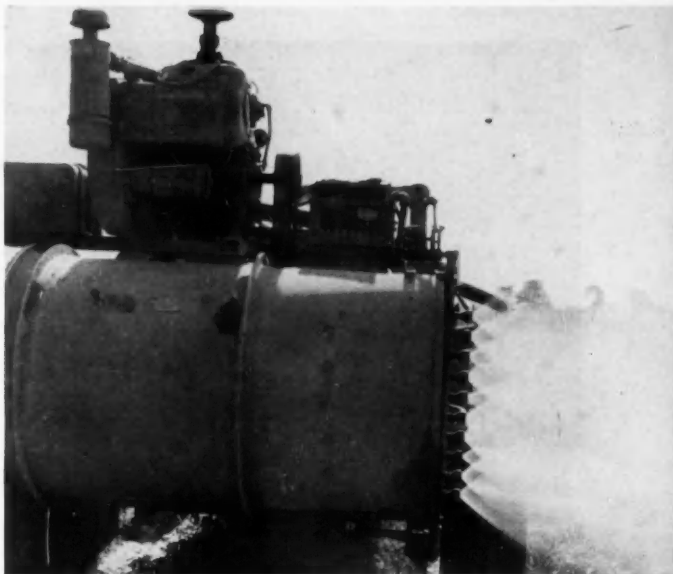
VEGETABLE	tomatoes	broccoli	cabbage	melons	cauliflower and Brussels sprouts	beans	peas
INTERVAL days between last spray and harvest	1	3	7	1	7	1	3

CYANAMID SERVES THE MAN WHO MAKES A BUSINESS OF AGRICULTURE



AMERICAN VEGETABLE GROWER

**American
Vegetable Grower**



One-way mist blower. Campbell Soup Company uses concentrate sprays for pest control in major production areas and on numerous vegetable crops.

Less Water, Quicker Coverage with **AIR-BLAST SPRAYING**

**Campbell Soup Company and other growers are using
75% less water, cutting labor in half with mist spraying**

By W. C. HANDWERK

*Assistant Director of Agriculture
Campbell Soup Company, Camden, N. J.*

OUR initial interest in concentrate mist or air-blast spraying dates back to 1947 when a Lancaster County, Pennsylvania, vegetable grower sprayed a portion of his tomato field with an orchard-type concentrate mist sprayer and found its pest control performance equal to conventional spraying.

Since 1947 we have used concentrate mist spraying on tomatoes and carrots in all of the major production areas of Illinois, Michigan, Ohio, Pennsylvania, New Jersey, and Maryland. In 1958 we had experience on both carrots and tomatoes in the

Platte River Valley of Nebraska, as well as on tomato plant-growing operations in southern Georgia. In 1959 we used it on 12 different vegetable crops in the Red River Valley of northern Texas.

Concentrate mist spraying refers to a procedure whereby a 4X (four times the normal quantity of fungicide per gallon of water) concentration of material is pumped under high pressure (300 to 400 pounds per square inch) through nozzles or jets into an airstream delivering up to 40,000 cubic feet of air a minute at 90 m.p.h.

Concentrate gives better spray deposit pattern than dilute. Spray pattern at left in this un-retouched photo of a Myers two-way is in shadow at machine but is exactly as shown at right.

at the point of delivery. This material is applied at the rate of 38 to 40 gallons per acre.

Conventional spraying refers to the application of a dilute solution of fungicide at high pressure (300 to 400 p.s.i.) by means of a boom sprayer equipped with three to six nozzles per row. In this case, 150 gallons per acre are applied.

During the past 12 years row crop type applicators having capacities of up to 40,000 cubic feet per minute, as well as blower attachments to replace the boom on conventional sprayers, have been developed. These newer machines are designed to take better advantage of aerodynamics.

(Continued on page 41)





Photo courtesy J. M. Huffington, Continental Can Co., Inc.

Field seeding of tomatoes. High phosphorus fertilizer placed below seed gives plants good start.

Let's Talk about APPLYING PLANT FOOD to YOUR CROP

By M. T. VITTUM and N. H. PECK

New York State Agricultural Experiment Station, Geneva

IT is well known and has been pointed out many times that all crops require certain specific chemical elements such as nitrogen, phosphorus, potassium, calcium, magnesium, etc. They also require a large amount of water which is necessary to transport these mineral nutrients from the soil through the absorbing hairs on the roots up through the stems of the plants and out through the branches to the leaves where some of it is used in photosynthesis. The remainder, and by far the major portion, is evaporated into the air.

Sunlight is another very essential factor in the growth of any plant, for without it no photosynthesis would occur and the small factories in each green leaf would be unable to convert carbon dioxide from the air and water from the soil into the organic compounds which are used in building up sugars, starches, other carbohydrates, and proteins in the plant.

Although all of the physiological processes involved in plant growth are essential, the function of the root system is emphasized here. As mentioned above, the root hairs are the mechanism through which growing

plants absorb water and mineral elements from the soil.

It is important to realize that these root hairs are just like humans in that they cannot live without oxygen. Roots require oxygen for the metabolism which is involved in active uptake of nutrients. In heavy and poorly drained soils, root systems are very shallow, for their oxygen must come from the atmosphere and atmospheric oxygen will not penetrate very deeply into a heavy, wet soil. Hence the standard recommendation of well-drained soils for vegetable crops.

Assuming that the vegetable grower has a productive and well-drained soil, that he has planted an adequate population of an adapted variety or hybrid, that he has irrigated to supply water throughout the life of the crop, and that he has controlled weeds, insects, nematodes, diseases, etc., the limiting factor in the growth of his crop becomes an adequate, uninterrupted supply of plant nutrients to the roots.

This brings us to the subject of fertilizers, and the three questions which are always raised: What kind (what ratio of N to P_2O_5 to K_2O),

In April, 1959 we published an article entitled *Where You Place Fertilizer Will Govern Crop Size and Quality*. Dr. Frank App of Seabrook Farming Corporation, Seabrook, N.J., believes this method of fertilizing is applicable primarily to field crops. Dr. App explained his views more fully in our March issue in the article entitled *Feed Your Crop According to Its Needs*.

Now Drs. M. T. Vittum and N. H. Peck of New York State Agricultural Experiment Station present their thinking on why fertilizer placement is important for vegetable producers and the role of cover crops.—Ed.

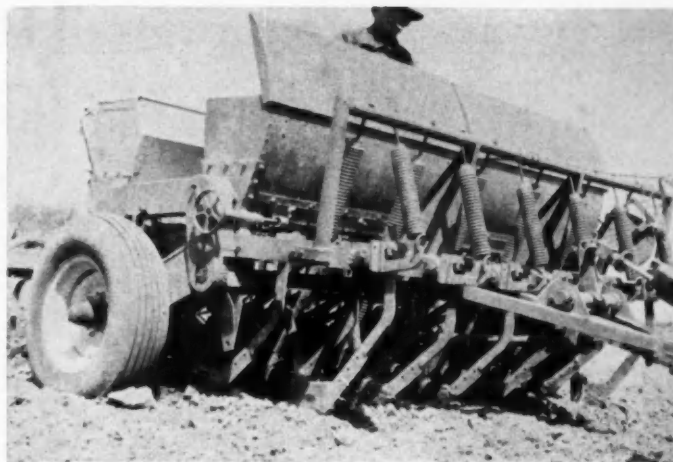
how much (what rate of application should I use), and how should I apply it (placement)? State and federal experiment stations, implement manufacturers, processors, and farmers throughout the country have worked on these three questions for many years.

Early in the history of this country it was discovered that several of the essential mineral elements are lacking in most of our agricultural soils. Many of these elements are present in the parent material (rocks), but as the insoluble minerals decompose into their soluble components, heavy precipitation in humid regions leaches these soluble elements from the soil.

At the same time, these soils become relatively acid so that when certain chemicals such as phosphorus are applied in fertilizers they



Single-disk opener for band application. Exact placement of band may vary with crop, soil.



Experimental drill used for planting and fertilizing peas has knife-type openers which place fertilizer in bands 2 inches lower than seed and 2 inches to side of seed.

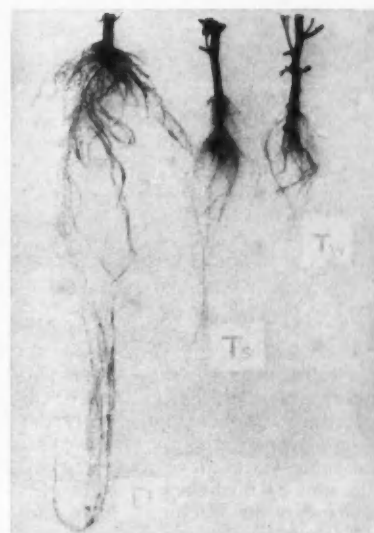
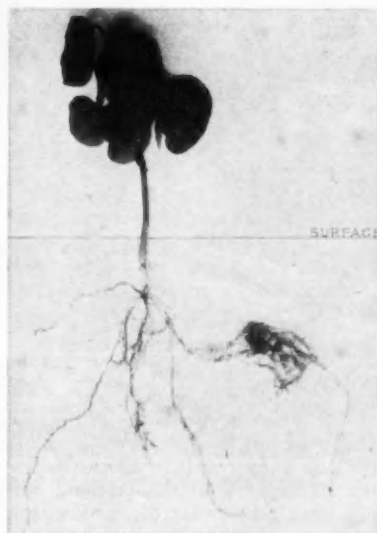
are locked up or are "fixed" in forms unavailable to plant roots.

In most soils phosphorus is the first limiting element in plant nutrition, so acid phosphate (superphosphate) was the first fertilizer recommended. Forty years ago common ratios were 0-1-0 (0-16-0 and 0-20-0) and 1-4-1 (4-16-4). As usage of phosphate increased, nitrogen became limiting so this material was added; and finally potash deficiencies were discovered so the complete N-P-K fertilizer was born. Popular analyses today are 1-1-1 (10-10-10, 12-12-12, and 13-13-13), 1-2-1 (6-12-6, 10-20-10, 12-24-12), and 1-2-2 (5-10-10, 8-16-16, etc.).

In the early years of the fertilizer industry, low-analysis mixtures (2-12-6, 3-9-3, 4-8-4, etc.) were manufactured because high-analysis compounds were not available. These low-analysis goods were used at rates as low as 50 to 100 pounds per acre.

This small amount of plant food had a stimulating effect when placed close to the seed but the low rates of application could not furnish all of the nitrogen, phosphate, and potash needed by the crop. As other cultural practices (varieties, spacing, weed control, etc.) improved, yield potentials increased and greater amounts of fertilizer were required to ensure maximum yields.

Chemical analyses indicate that most crops require large amounts of nitrogen and potash, but rela-



Photos courtesy C. B. Sayre

Left—Concentration of roots around fertilizer which was placed 2½ inches to side of seed; 1 inch lower than seed. Right—Effect of transplanting on root development of tomatoes: D—direct seeded; Ts—transplanted, using starter solution; Tw—transplanted, using water. Transplanting breaks the tap root and results in a more shallow root system.

tively small amounts of phosphorus. A 20-ton crop of tomatoes, for example, requires 200-80-400 pounds per acre respectively of N, P₂O₅, and K₂O. Many growers think nothing of applying 100 pounds or more per acre of each of these three major nutrients. High applications of phosphate are necessary because of the low efficiency of utilization. Seldom will a crop use more than 20% of the fertilizer phosphate applied to or for that crop.

As scientific facts were uncovered, it was found that response to phosphate occurs early in the life of the young seedling or transplant. With low rates of application of low-analysis fertilizers, no problems occur; but, as higher rates of more concentrated materials are used, con-

centrations of soluble salts near or in direct contact with germinating seeds or young transplants become toxic or encourage abnormal growth of harmful fungi, bacteria, and other soil organisms.

The major injury occurs from nitrogen and potassium salts—not phosphorus. Thus the evidence strongly justifies the recommendation of a band of fertilizer high in available phosphorus placed near, but not in contact with, the seed.

In band placement of fertilizer, there is less contact between the phosphate in the fertilizer and the phosphorus-fixing fractions of the soil. Thus less phosphate is fixed—and more is available for the crop—when applied in bands than when
(Continued on page 35)



Grower and fieldman examine vigorous planting of pickling cucumbers just before harvesttime.

By S. K. RIES

Michigan State University, East Lansing

GROWERS of Michigan's \$5 million pickling cucumber crop have chalked up a considerable victory for themselves in the last five years. They have accomplished this by improving their production practices.

More cucumbers for pickling are grown in Michigan—about 25% of the U. S. crop—than in any other state. During the 10-year period 1945-54, Michigan, Wisconsin, and North Carolina, the three states with the largest acreages, averaged 64, 75, and 80 bushels per acre respectively. During the past five years, the same states have averaged 135, 103, and 84 bushels.

Growers in Michigan have doubled their production per acre, and, perhaps more important, they now obtain higher yields than their two competitors. This 71-bushel increase in productivity of the past five years over the previous 10 years means that the average Michigan cucumber grower is now grossing about \$80 more per acre.

It pays the grower, his processor, and his labor to produce high yields, because they result in more efficient use of supervision, labor, land, and all the materials of production. Michigan processors can now depend on a uniform supply and better quality from their growers.

Better co-operation between Michigan growers and processors, larger acreages per farm, the use of disease-resistant varieties, new insecticides, and improved production practices have resulted in higher yields.

DOUBLE YOUR CUCUMBER YIELD!

Michigan growers are averaging twice as many pickling cucumbers per acre as they did five years ago. Here's how they do it



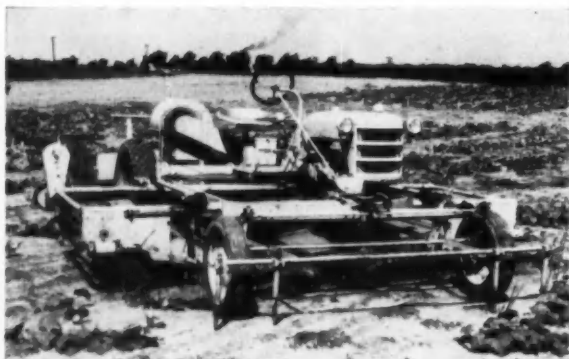
Cucumbers 24 inches apart in foreground show weak growth next to 6-inch planting in background.

What are these improved production practices?

Formerly plants were spaced 24 inches apart in rows 6 feet wide and care was taken not to crowd the plants. However, research has indicated that spacing plants 6 inches apart in the row increased early yield by more than 50 bushels and total yield by 70 bushels per acre.

Wide rows were formerly used because it was believed that crowding reduced yields. In one test, row

(Continued on page 38)



Chisholm-Ryder cucumber harvester picks fruits on an untrained row. Machine keeps vines in position.



MSU cucumber harvester picks row which is trained in one direction by air-blast during cultivation.

Mulch with "Quality Made" GER-PAK Polyethylene Sheeting

REAP HIGHER YIELDS— EARLIER

Balance rising costs by making your crops more profitable!

It makes good sense to improve crop size and quality. You can do just that and add to your profits with GER-PAK Sunlight-resistant Black Polyethylene Mulch. And with higher yields—matured in advance of the regular season—you walk off with top-dollar market prices! Weeds are killed safely—and the ground stays weed-free, moist and soft. Get lightweight, easy-to-handle GER-PAK Polyethylene Mulch in convenient 3- and 4-foot widths, 1000 feet long. Inert to soil and chemicals, weather-resistant, too. Write today for the name of your nearest supplier!



**SPEEDY MACHINE LAY-
ING** can be accom-
plished with simple
attachments to avail-
able farm equipment.



**SIGNIFICANT YIELD
INCREASES** are trace-
able to GER-PAK
Polyethylene Mulch.
Fruits and vege-
tables are generally
of better quality and
rotting is minimized
because they do not
come in contact with
the soil.

FREE DETAILED DATA—Send for GER-PAK Agri-News Bulletins No. 2 and No. 7 which provide latest authoritative data on mulching with polyethylene sheeting. Write Gering Agricultural Service, Dept. VG-3.

for the name of your local GER-PAK distributor



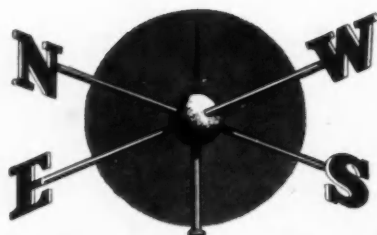
The short way to say superior polyethylene sheeting

GER-PAK®

GERING PLASTICS

division of STUDEBAKER-PACKARD CORP., Kenilworth, N.J.

STATE



NEWS

● Demand for Pickles Ups Arkansas Cucumber Acreage

● Asparagus Growers Plan United Front with National Association

Cucumber Pickle Industry Expands

ARKANSAS—The most intense activity in the cucumber production program in north Arkansas since the enormous cucumber pickle industry was established in this state in 1946 is under way this year. The cucumber acreage will be increased in several counties in 1960.

Faulkner County farmers are signing contracts for 100 acres of cucumbers, which will be purchased by Brown-Miller Pickle Company of Texarkana. The contract price will be: No. 1, \$5.50 per 100 pounds; No. 2, \$2.50; and No. 3, \$1. This company will also have a huge acreage in White, Independence, and other counties. Storage vats are located at Conway and Bald Knob.

Atkins Pickle Company at Atkins is increasing its contracted for acreage in Pope, Searcy, Stone, and Van Buren Counties. The enormity of this firm's operations was manifested last year when Kroger Company purchased \$500,000 worth of pickles from Atkins on one order.

A new buying station will be opened at Marshall by Atkins Pickle Company this year. Harry C. Willmering of St. Joe will be station manager. Lona Ackerman, station manager at Mountain View in Stone County, has announced that the company has requested planting of a larger acreage in his county.

Searcy in White County has been a cucumber-growing center since 1946. The crop in White and nearby counties is bought by Brown-Miller Pickle Company.

The fourth annual Pink Tomato festival will be conducted at Warren, Bradley County, in the heart of the Arkansas tomato-producing country, June 17-18. In the meantime plans have been made for the planting of approximately 3000 acres of tomatoes for the 1960 harvest in the Warren area.

James Hurley, Jr., and Weldon Sledge are leaders of the group that is making plans for the colorful festival. Sledge is chairman and Hurley is vice chairman. Ten members of the steering committee will serve as chairmen of various activities at the festival. The group is determined to make the 1960 festival the most outstanding program in its history.—*Ralph Underhill.*

Study Marketing Orders

NEW JERSEY—Garden Staters recently met with Phillip Alampi, State Secretary of Agriculture, to consider enabling legislation which would permit the establishment of state marketing orders when they are desired by commodity groups.

Enabling legislation had been requested by New Jersey State Sweetpotato Industry Association, Inc. Other groups, including New Jersey Farm Bureau, New Jersey State Grange, and State Agricultural Convention, have urged study of the feasibility of state marketing orders.

William J. Kuhrt, assistant director of California Department of Agriculture, addressed the meeting and answered questions of growers. Kuhrt has directed the mar-

keting order program in California since the initial enabling act was passed in 1937. There are 33 marketing orders now in effect in the Golden state.

State marketing orders usually provide for regulation of movement of a product to market, quality and grade standards, promotion and advertising, and research in production and marketing. Cost of administering the program are borne by the growers.

Marketing System Outdated

TENNESSEE—In 1959, Lake County shipped 240,000 five-dozen cases of sweet corn to 43 major cities. Yet, a tour of several major Memphis food stores revealed no corn for sale that had been produced in the mid-South. Furthermore, a count of the items in three major stores revealed that almost all of the food had been imported to the rich mid-South agricultural area from far outside the area.

Grant Duke, manager of Memphis Chamber of Commerce Agricultural Department, reported the few processing plants in the area were processing food imported from other states as well as the mid-South.

Meanwhile, unemployed farm labor and farmers in the mid-South who can no longer make a living are leaving the land. Rural counties have lost as much as 30 to



RECEIVES KEYSTONE AWARD

Earl M. Page (left), president of Corneli Seed Company, presents first Keystone Seeds Award of Merit to Theodore Frank, Cornell plant breeder. Frank, who came to this country from Hungary in 1948, has developed many new varieties, including Corneli 14 snap bean and Keystone Resistant Giant pepper.

40% of their population during the last decade.

Most of the problem lies in an antiquated marketing system. The Lake County corn situation demonstrates not only that sweet corn can be grown profitably in the mid-South but also that the mid-South can become a producer and shipper of food products instead of a buyer.

University of Tennessee has reported that lima beans, beets, corn, cabbage, asparagus, English peas, tomatoes, okra, sweet peppers, hot peppers, lettuce, potatoes, all greens, turnips, string beans, and pickles can be grown profitably in the mid-South. But the principal crops grown in Tennessee are 1200 acres of black-eye and crowder peas, 9000 acres of okra, 2000 acres of limas, and 4000 acres of greens.

Yet Memphis is one of the nation's big vegetable distributing centers, with a total food sale volume of \$514 million in the 76-county market.

Tip-Burn Resistant Lettuce Variety

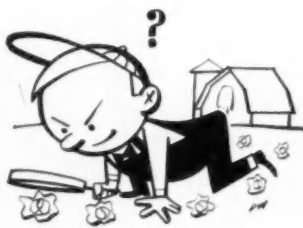
ARIZONA—The Arizona Pure Seed Advisory Committee has approved a new tip-burn resistant lettuce variety, Arizona Sunbright, thereby releasing it for use in coming seasons, according to Boyce Foerman, University of Arizona agricultural agent.—*Ernest W. Fair.*

Plan National Asparagus Association

ILLINOIS—At a recent meeting held in Chicago, 22 members of the asparagus industry (representing about 85% of the national production) selected a steering committee to form a national asparagus industry association.

Suggested goals of the national association are: To promote welfare of industry; to act as medium for exchange of information within the industry; to co-ordinate regional approaches to industry problems; to work toward an increase in national sales and consumption through improvement, grading, packing, handling, merchandising, and consumer education; to promote research; and to co-operate with

YOU be the EXPERT!



TONY had never raised cucumbers before, and he was anxious to have an early harvest. So he was disturbed when the early blossoms dropped off and failed to set fruit. As many as five or six on each plant would open but no small cucumbers formed.

The vines appeared healthy, soil moisture was adequate but night temperatures had been on the low side. What is your diagnosis?

Answer on page 30



Close-cultivate with ease!

Get top fuel economy with Farmall® tractors



On wheels or tracks, IH leads the field!
The new T-4 crawler (above) is one of three new International® crawler tractors. The T-4 delivers 26.3 drawbar horsepower* on gasoline; the T-5, also gasoline, provides 30.9* horsepower at the drawbar; and the TD-5 Diesel is rated at 28.5 drawbar horsepower*. These new crawlers feature a low profile, high clearance and wide range of track gauge and position options.

*Estimated horsepower corrected to standard conditions.

You can't beat a Farmall for the quick, responsive control so necessary for inch-close cultivation. And rigid McCormick® cultivators are your assurance that a close-working ground tool won't sway into the row and destroy valuable crops.

With Farmall, you get top economy, too! This is because you can pick *exactly* the power size you need to do your job. Regardless of the tractor selected, you get dollar-saving fuel economy and rugged construction that have made IH tractors famous the world over.

Job-tailored Farmall tractors and McCormick equipment are designed to handle all your farming jobs at lowest possible cost.



See your IH dealer soon!
He'll be glad to help you pick the IH tractor and equipment that's best for you. Remember, IH wheel and crawler tractors can be "custom" fitted to your farm. Your IH dealer will show you how you can do the kind of work you'll be proud to claim. Stop in soon! Arrange for a free demonstration.

INTERNATIONAL HARVESTER

New Profits from Row Crops begin with

WADE RAIN
Sprinkler Irrigation



**NEW FIELD-TESTED 1960
WADE RAIN
ADVANCES**
Save Time.. Labor.. Water!

MARKET GARDENERS everywhere have learned the yield and profit boosting advantages of WADE RAIN Sprinkler Irrigation.

WADE RAIN has the Features that save Time, Labor and Operating Cost. Year after year, these Savings mount up to give you the lowest

cost, most satisfactory Sprinkler Irrigation you can own. **ACT NOW...put WADE RAIN TO WORK for you this year!**

★
"Pay as You
Grow"

Ask your
WADE RAIN
Dealer



Only
WADE RAIN
has
CONTROLLED



**FREE PLANNING
FORM**
"FARM-FACTS" makes
it easy to plan...
Use Coupon

**Self-Draining
LOKS-IN GASKET**
Drains Automatically When
Pressure is Off...No Lifting
Pipes Full of Water!

RM WADE & CO.
SINCE 1865

Hqrs.—1919 N.W. Thurman St.
PORTLAND 9, OREGON

COLUMBUS 8, OHIO • **SEATTLE 4, WASH.**
119 East Goodale St. 532 First Ave. S.

Foreign Sales — Irrigation Development Corp.
11 West 42nd, New York, 36, N. Y.

Send Free FARM-FACTS and
New '60 WADE RAIN Literature

Name.....
Rt. & Box.....
City..... State.....

W72-5-60

other agricultural associations having mutual interests.

The new association is expected to be officially formed at a meeting of industry members to be scheduled on or before November 30. Directors of the association are to be selected on the basis of one from each major producing area and an additional director will be selected for each 20,000 acres. Thus California will have three representatives.

It was disclosed at the Chicago meeting that California, New Jersey, and Michigan contributed about \$200,000 in 1959 toward promotion and research to increase the sale of asparagus at regional and national levels.

Named to the steering committee were: Vinton N. Thompson, director of markets, New Jersey Department of Agriculture, (temporary chairman); F. Rene Gossiaux, executive director, New Jersey Industry Council; Bela E. Kennedy, president, Michigan Asparagus Growers Co-operative; Clair C. Davis, chairman of advertising committee, California Fresh and Processed Asparagus Advisory Boards; Gene R. Coe, manager, Washington Asparagus Growers Association; and Ronald Boltman, Boltman Asparagus. Harold J. Hartley, assistant commodity director, American Farm Bureau Federation, will serve in an advisory capacity.

Tomato for High Plains

TEXAS—Plainsman, a high-yielding tomato developed for the High Plains area, has been released by Texas Agricultural Experiment Station.

Plainsman was developed as a processing tomato. Fruit of the new variety are round to oblate, firm, medium size (average 5 to 6 ounces), smooth on both shoulder and blossom ends, and dark green in color in green-mature stage. The ripe fruits are bright red in color. Tomato juice manufactured from ripe fruit of Plainsman has consistently rated "fancy" on color.

Plants of Plainsman are small and compact. They have been grown without crowding on 42-inch rows, with plants 18 inches apart in the row. Fruit clusters are close together on the main stem and on branches, and several clusters frequently mature simultaneously.

Plainsman is classified as an extra-early variety. It has no known resistance to foliar disease or fusarium wilt. However, the small compact plant facilitates standard spraying procedures.

"Springsweet" Onions

MICHIGAN—National Onion Association has launched a national campaign to promote the mild sweetness of the spring crop of onions now coming on the market. The onions, named Springsweet by growers, are a flat globe in shape and are available in both white and yellow varieties.

Full color price cards with the message "New onions add spring flavor magic... white or yellow, they're extra mellow... perfect companions for fresh salads," were made available to produce departments. A second card pictures an onion-topped hamburger and garnish vegetables.

J. W. Rose, executive secretary of NOA, reports that a major effort has been made to acquaint newspaper food editors and woman's editors of leading TV stations with the mildness of the new crop. More than 500 woman's editors were sent samples of Springsweet onions.

Name District Agent

MAINE—Roland E. Roberts, Middleton, Conn., twice a state winner in National Junior Vegetable Growers Association Production and Marketing contest, has been appointed district agent in vegetables

for Co-operative Extension Service of University of Maine.

Roberts will assume the duties carried by former extension vegetable specialist Robert W. Paulson, who resigned last fall to become 4-H agent in Wayne County, Michigan. Roberts is a graduate of University of Connecticut, where he majored in horticulture-vegetable production. He will make his headquarters in Orono.

Sweet Corn Marketing Order

FLORIDA—Sweet corn growers in the central and southern area of Florida have approved a state marketing agreement which includes a 2 cent per crate assessment with the funds to be used for a promotional program. The agreement was approved by more than the required 65% of the growers in Henry County and the western part of Palm Beach County.

This supplements a voluntary program which has been in effect for the past two

Become a GREEN THUMB MEMBER

In the April issue, membership in Vegetable Growers Association of America, including Washington headquarters and a monthly newsletter, was listed at \$2. This \$2 price is for growers who are members of a local or state vegetable or potato association affiliated with VGAA and is usually paid by the association direct to VGAA for each member. For growers who cannot participate in a group membership, the Green Thumb membership applies, as follows:

80 acres or less,	
Under 1 acre of greenhouse	\$ 10
81 to 500 acres,	
Over 1 acre of greenhouse	\$ 25
500 acres or over	\$100

If you are a member of an association not affiliated with VGAA, talk to your president about a group membership in the national association, to lower your dues and bring the advantages of VGAA to all your members.

For a Green Thumb membership send remittance to Bob Frederick, Executive Secretary, 528 Mills Bldg., 17th and Pennsylvania Ave., N. W., Washington 6, D. C.

years. A sweet corn committee will administer the advertising program, which begins this year, from Florida Fruit & Vegetable Association at Orlando. The program called for advertising in 27 daily newspapers in 20 major markets during April and May.

The grower committee is headed by Lewis Friend, Pahokee, with George Wedgworth, Belle Glade, as vice-chairman, and Billy Rogers, South Bay, as secretary-treasurer. Other members of the committee include Ray Hutton, Luke Frazier, and Walter Hall, Pahokee; Ross Wilson and S. N. Knight, Belle Glade; C. A. Thomas, Lake Harbor; and David Earl, Oviedo.—Porter V. Taylor.

Cold Kills Tomato Plants

GEORGIA—Cold weather has tomato growers in the Tifton area wondering about their crop. Usually tomatoes are transplanted in the area by March 15 and are selling in quantity on Tifton Farmers Market by June 15. Last year \$222,386 of tomatoes were sold on the Tifton Market.

This year may be different. Plants for the Georgia crop are usually secured from north Florida. But cold weather in that area killed tomato plants and none were available to Georgia growers until late April.

Some growers tried to grow their own tomato plants but the extreme cold weather during March damaged the plants severely and killed out some of the beds.

Georgia-grown tomatoes will be available about the same time as those grown in Florida. How the lateness will affect the price is something about which growers are wondering.—Pauline T. Stephens.

AMERICAN VEGETABLE GROWER



Colorado Potato Beetle 🐞 Leafhoppers 🐞 Fleabeetles 🐞 Potato Tuberworms 🐛
 Armyworm 🐛 Green Stink Bug 🐞 Leaf-footed plant bug 🐞 Tough-to-kill aphids 🐛

Thiodan®

kills them all: keeps killing them

Besides positive control of all these potato pests, Thiodan provides every other feature you've looked for in a new broad spectrum insecticide. It provides really long-lasting residual control; and Thiodan is safer to use than many pesticides. Thiodan is harmless to vines and causes no off-flavor in potatoes. And what may be a bigger

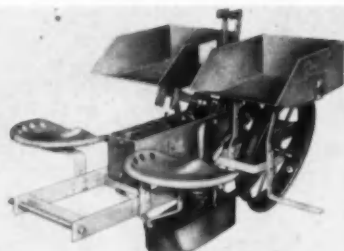
bonus, recent field experience indicates that Thiodan treated plots produced greater yields than other standard treatments under controlled test conditions.

On all counts, performance, residual control and safety, only Thiodan provides so much help producing bigger, better crops. See your dealer today!

Thiodan®

TECHNICAL CHEMICAL DEPT., NIAGARA CHEMICAL DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, MIDDLEPORT, N. Y.

POWELL "42" TRANSPLANTERS



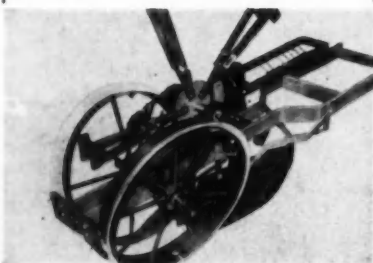
"42" Basic Unit

In 1 or Multiple Row Lift Types, 1 or 2 Row Pull Types. Also with Fertilizer Equipment



Plant Pick-up Tray

Simply drop plants into the tray. The "42" Spaces and waters them precisely.



Adjustable Packer Wheels

A Width to suit your
Soil Conditions

• • •

Write for free
Literature

• • •

**POWELL MANUFACTURING
COMPANY, INC.**

Wilson, North Carolina

Growers Try PAPER MULCH

Commercial tests in Illinois update its application and use

By **N. F. OEBKER**
and
J. W. COURTER
University of Illinois

THE newest innovation being tried by growers in Illinois is a fungicide-treated paper for mulching vegetables. In 1959, the department of horticulture of University of Illinois conducted tests with the new mulch on commercial vegetable acreage in the Prairie state.

Paper mulch offers many of the same benefits as black plastic mulch. It controls weeds in the row, conserves moisture, keeps fruits clean, helps prevent fruit rots, warms soil in spring, prevents leaching of nutrients, and maintains good physical condition of the soil. All of these benefits contribute to earlier crops, bigger yields, and better quality.

Paper has two big advantages over plastic mulch—lower cost and no disposal problem. A 40-pound black paper 40 inches wide will be available this year which will cost about \$100 per acre (6-foot row spacing) compared to \$120 to \$140 for 1.5 mil plastic. Unlike plastic which must be removed, paper can be plowed under without interfering with the following crop.

Chief disadvantage of paper is that it tears easily. However, this problem can be overcome if a good seedbed is prepared (large stones, clumps of sod, lumps of soil puncture paper and clog plows of laying machine) and if the paper is laid carefully.

The paper mulch used in the 1959 tests was a brown kraft-type treated with a fungicide to prevent it from decomposing during the growing season. Several different weights were used.

A light paper (30-pound) had to be discarded because enough light penetrated to permit weed growth; a heavy paper (60-pound) because of high cost. To overcome the problem of light penetration, a black 30-pound paper was tried and gave complete weed control in the area covered.

This black mulching paper is made by Mosinee Paper Mills Company, Mosinee, Wis.

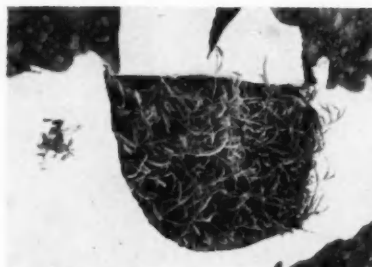
The well prepared, level seedbed should be wide enough to properly

lay and anchor the paper. Enough fertilizer should be applied to carry the plants through the season as it is difficult to side-dress after the paper is in place.

Paper mulch is easily laid with a tractor-attached plastic mulch applicator manufactured by Engine Parts Manufacturing Company, Cleveland, Ohio, and modified for use with paper. In our tests the paper was laid at a rate of less than two hours per acre. This type of machine could be built in any good farm shop.

A tractor with hydraulic lift and rigid drawbar will help to properly control and adjust the applicator while the paper is being laid. Any movement of the machine from side to side places stress on the paper, causing it to tear.

In the tests, 12-inch disks, one on each side on the rear of the machine,



Heavy weed growth under mulch caused by light penetrating brown (30-pound weight) paper.



No light penetrated black (30-pound) paper mulch. Result: complete weed control in area.

did a better job of anchoring the paper with soil than the plow blades. The disks did not clog with undecomposed crop residues, often a problem with plow blades.

Plow blades were used in front of the machine to make furrows, but disks could be used there also. A floating wheel, instead of rigid hard rubber wheels, was necessary to hold the edge of the paper in the furrow until it was covered with soil.

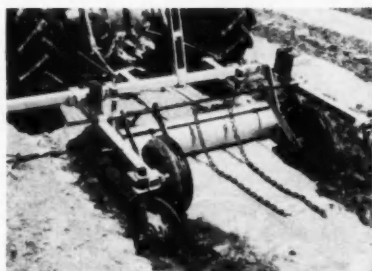
The biggest drawback when using a mulch such as paper or plastic is the hand planting of seeds or transplanting through the mulch. The

normal process is to cut holes in the paper at the desired distances apart and to place the seed or plant in the soil at these points. A desirable and workable spacing between rows for tomatoes and cucumbers when using paper mulch was found to be 6 feet.

Agricultural engineers at University of Illinois are at work on development of a machine which will place seeds through the paper at the time the paper is laid. Such a planter will make paper more practical for commercial use—especially for vine crops such as cucumbers and melons.

Hoeing and cultivating are reduced considerably with paper mulching. With vine crops only a little hand weeding may be needed around the plants at thinning time. Weeds are seldom a problem around transplants. Some cultivation is needed in the area between rows.

Preliminary studies show that black mulching materials of paper or plastic when exposed to sunlight increase the soil temperature. This is an advantage in the spring but in



Tractor-attached plastic mulch laying machine modified to lay paper. Rigid drawbar controls, adjusts applicator, prevents paper from tearing.

midsummer high soil temperatures are often undesirable because they reduce root growth, resulting in decreased yields. To avoid this problem good foliage growth should be encouraged.

It was of interest to find that soil temperatures under brown mulching paper were about the same as under cultivated soils.

No farm yield records were kept in 1959 but experiments in 1958 showed significant increases in yield from mulching both tomatoes and cucumbers (AVG, May, 1959, pg. 16). In 1959, cucumbers, the only crop studied in replicated tests, gave over 90% increase in both early and total yield when mulched.

Any grower who is interested in finding a new method of producing bigger yields of better quality produce should give this modern paper mulch a try. THE END.

MAY, 1960

COVERS 300 ACRES A DAY



Unretouched photo shows Myers superior two-way coverage.

Myers Exclusive Air Handling and Two-Way Discharge give

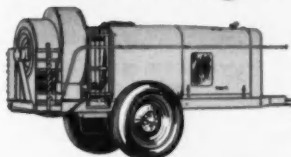
UNMATCHED PROTECTION

Big volume air velocity is delivered directly off fan blades, gives fast, effective coverage over a wide spray swath.

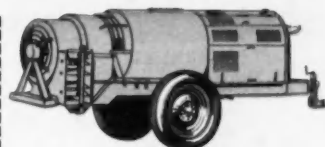
Plants receive complete, protective coverage from top to bottom—even under adverse wind conditions.

This unmatched protection is not available from other sprayers which depend on the added boost of unpredictable down winds or cross winds to carry their spray pattern.

A model designed for every spraying job



Big, powerful 227 covers 300 acres a day.



Fast, economical 225 covers 250 acres a day.



Compact, efficient F29 covers 100 acres a day.



Smaller, thrifty F24 covers 50 acres a day.

Prove to yourself —ask your Myers sprayer dealer for a demonstration of a Myers air or boom sprayer in your own field—or for more information write to:

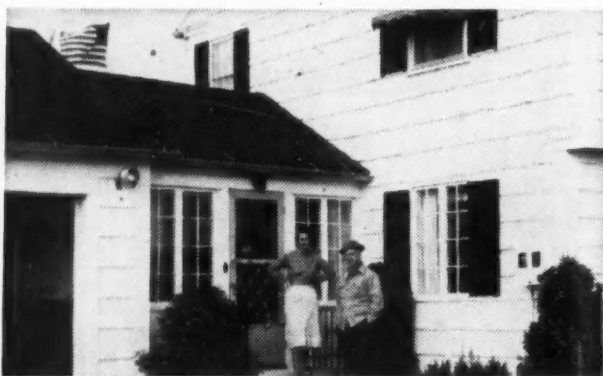
Myers

The F. E. Myers & Bro. Co.
ASHLAND, OHIO KITCHENER, ONTARIO

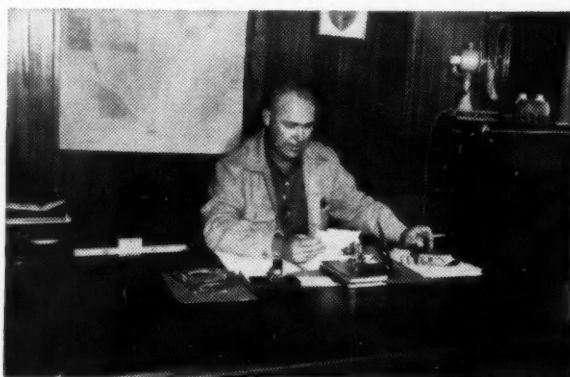
Maine's John C. McCall grows with up-to-date equipment and



John C. "Tex" McCall uses two-way radio to check progress of a spraying operation on another of the farms which make up Dupram Farms.



Flag flies over the large Garrison Colonial farm home of McCall and his wife, Ardis, shown on steps.



McCall maintains a modern, well-equipped office on the farm, to conduct business reaching many distant points in the country.

potatoes the modern way... a DITHANE M-22 spray program

"Taterstate" brand of Certified Foundation Seed Potatoes go from Dupram Farms in Washburn, Maine, to 28 or more states each year.

Owned by Harry Umphrey and his family, the modern 1200-acre potato operation at Dupram Farms is managed by John C. McCall, a son-in-law of Mr. Umphrey.

Along with managing this large farming operation, "Tex" McCall finds time for an active role in Boy Scout, Rotary and Town Council work. He also serves as president of the Associated Industries of Maine, vice president of the Maine Polled Hereford Assoc., director of the National Assoc. of Manufacturers, vice president of the Aroostook Potato Growers, and officer in the family owned farm supply, frozen food and starch companies. Fishing and horseback riding are his favorite leisure activities.

McCall has now used DITHANE M-22 (maneb) fungicide for two years. He says, "The performance of this product has convinced us that it is superior to any fungicide we have ever used to control potato blight."



Sons Billy, 13, and Harry, 7, aboard their pet horses, Streak and Honey, respectively.



As a sideline to Dupram Farms' potato growing and processing business, 150 head of registered Hereford beef cattle are fattened for market.



Foreman Harry Brewer unloads DITHANE M-22 from pickup and George Tardiff fills sprayer as McCall watches the operation.

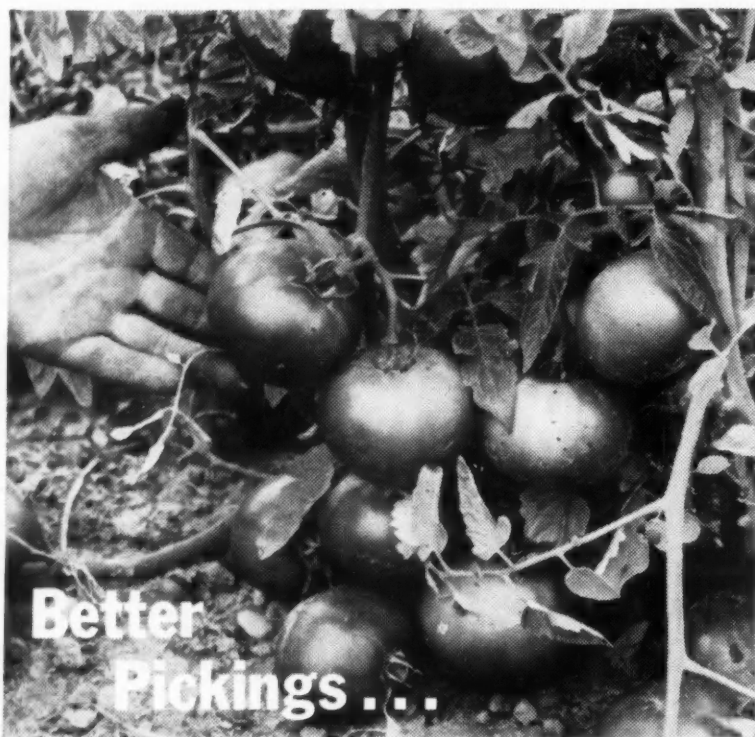
DITHANE M-22...now 80% maneb
...from your partner in crop protection

DITHANE is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.



Chemicals for Agriculture
ROHM & HAAS
COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.



DITHANE M-22

Now, more than ever, DITHANE M-22 is your most effective protection against tomato diseases, and your greatest assurance of higher yields and bigger profits. This time-proved 80% maneb fungicide controls early and late blight, anthracnose, gray leaf spot and septoria leaf spot on tomatoes. It also improves the vigor and color of the plants . . . making bigger yields possible. To kill fruitworm, hornworm, pinworm and psyllid on tomatoes, use RHOthane insecticide . . . another field-proved product from your partner in crop protection. See your dealer now for dosage and timing information.

DITHANE and RHOthane are trademarks, Reg. U.S. Pat. Off. and in principal foreign countries.



Chemicals for Agriculture
ROHM & HAAS
COMPANY
 WASHINGTON SQUARE, PHILADELPHIA 5, PA.

As It Looks to Me

By JOHN CAREW
 Michigan State University, East Lansing

TRY THIS simple problem in arithmetic: You sell lettuce to a chain store buyer for 10 cents a head. He sells it retail for 30 cents a head. What is the percentage mark-up?

Most growers would solve it this way:

$$\begin{array}{r} 30\text{¢ (retail price)} \\ - 10\text{¢ (grower's price)} \\ \hline 20\text{¢ (mark-up)} \end{array}$$

$$\frac{20\text{¢ (mark-up)}}{10\text{¢ (grower's price)}} = 200\% \text{ mark-up}$$

But chain stores will figure it this way:

$$\begin{array}{r} 30\text{¢ (retail price)} \\ - 10\text{¢ (grower's price)} \\ \hline 20\text{¢ (mark-up)} \end{array}$$

$$\frac{20\text{¢ (mark-up)}}{30\text{¢ (retail price)}} = 66\% \text{ mark-up}$$

The difference comes from the fact that chain stores, in fact most retail sales organizations, calculate percentage mark-up on *retail price*, not on cost price; in other words, what they sell it for, not what they buy it for.

By calculating percentage mark-up in this manner, produce merchandisers rightfully insist that no fruit or vegetable can be marked up higher than 100%, even though they may be pricing tomatoes at 40 cents per pound when they bought them for 10 cents.

Debating the validity of this method of figuring mark-up is almost pointless. More important is to realize that it is standard practice.

A bank will loan you money to finance a car at 5% interest. At the end of 36 months you may find you actually paid 15%. You were not cheated—it is just that you and the bank don't calculate in just the same way.

Chain stores, both corporate and voluntary, now sell 83% of our nation's food. They will continue to play an increasingly dominant role in the marketing of vegetables and fruits. Whether growers agree with chain store procurement and pricing policies or not, a need for greater mutual understanding is apparent.

Manufacturers of soap, automobiles, and corn flakes maintain a pointed interest in the retail mer-



chandising of their products. Vegetable growers would do well to become equally acquainted with the markets to whom they sell.

Compaction-Free Planting

Every now and then someone comes out with an idea that makes you wonder why it wasn't put to use earlier.

Packing the soil *under* the seed and covering it with loose soil has proven superior to the standard planting method of running the press wheel on top of the soil. Soil crusting is reduced, moisture losses retarded, and soil compaction is much less of a problem.

Bill Stout, of Michigan State University, and William Hollis, of University of Maryland, found this method increased germination and resulted in higher yields.

Hollis had the firming wheel on a snap bean planter run in the bottom of the furrow pressing the uncovered seed into the soil. Loose soil then filled the furrow and covered the seed. He obtained more pod-bearing plants, more pods per plant, and a marked increase in yield.

Incentive Pay

Bonus pay for farm help can be a profitable labor management device.

Packing house crews or field help cannot always be paid on a piecework basis. This is particularly true for foremen or other supervisory help working for a set wage or salary.

It is human nature to work a bit harder if something "extra" is in the offing.

Try to link pay to performance. Determine the standard work rate for each work crew or job and reward men for increased productivity.

Talk with growers who have become labor management conscious, and you will learn about:

- The salaried farm manager who receives a bonus of 10% of the additional net profit on all crops that exceed a certain previously established "normal" yield.

- Pickers who receive a 10% bonus if they continue working for the entire season.

- Members of a packing shed crew who paid additional when they exceed a predetermined number of packages per day.

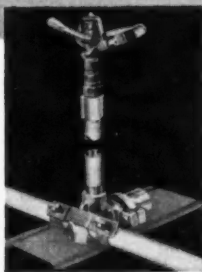
- A tractor driver whose base wage is supplemented when yields are high.

Give incentive pay a trial. Good farm labor relations are always rewarded. THE END.

Working drawings for an attractive, easy-to-build roadside stand are available for \$2.00 from AMERICAN VEGETABLE GROWER, Willsoughby, Ohio.

Attention Vegetable Growers

SHUR-RANE Sequa-Matic Irrigation



Sequa-Matic Unit

"SEQUA-MATIC"
VALVE with
Simple 3-Stage
Operation

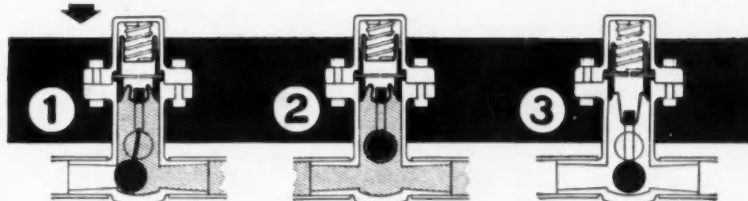
AUTOMATICALLY...

Reduces Labor Costs by providing irrigation for an entire season with just one pipe setting.

Increases Profits by utilizing all water to the maximum with virtually no labor cost.

Increases Yields by providing the right amount of water at the right time.

Improves Crop Quality by optimum moisture control from planting time to crop harvest.

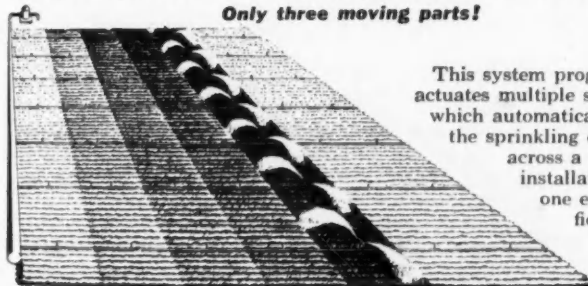


1. Sprinkling Position

2. By-Passing Position

3. Re-Set Position

Only three moving parts!



This system progressively actuates multiple sprinklers which automatically move the sprinkling operation across a grid-type installation from one end of the field to the other.



A typical 40-acre system may use up to 52 laterals.

John BEAN

DIVISION OF Dept. AVG-1

FOOD MACHINERY AND CHEMICAL CORPORATION

LANSING, MICHIGAN • ORLANDO, FLORIDA • SAN JOSE, CALIFORNIA



Gentlemen:
Please send me complete information on:

- ☐ Sequa-Matic Irrigation
☐ SHUR-RANE Sprinkler Irrigation System

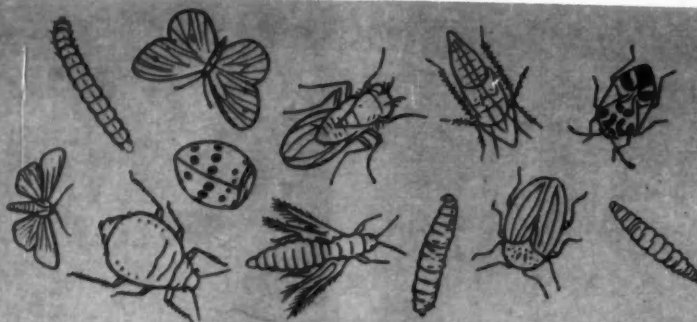
Name _____

Address _____

City _____ State _____

☐ Farmer ☐ Student ☐ Dealer

Insects: APHIDS • COLORADO POTATO BEETLES • CORN EARWORMS • DIAMONDBACK MOTHS
DIPTEROUS LEAF MINERS • FLEA BEETLES • HARLEQUINN CABBAGE BUGS • IMPORTED CABBAGEWORMS
LEAFHOPPERS • MEXICAN BEAN BEETLES • MITES • ONION MAGGOTS • ONION THRIPS • SOUTHERN
POTATO WIREWORMS • VINEGAR FLIES (*Drosophila* sp.)



controls most insects

on most vegetables



Vegetable Crops: BEANS (lima) • BEANS (snap) • BEETS • BROCCOLI • CABBAGE • CARROTS
CAULIFLOWER • CELERY • COLLARDS • CUCUMBERS • ENDIVE • KALE • LETTUCE • ONIONS • PARSLEY
PARSNIPS • PEPPERS • POTATOES • RADISHES • SPINACH • SQUASH (summer and winter) • SWISS CHARD
TOMATOES • TURNIPS (roots) • TURNIPS (tops) *Melons:* CANTALOUPE • MUSKMELONS • WATERMELONS

DIAZINON

INSECTICIDES

get even the tough ones!

- broad spectrum action
- simplifies spray programs
- saves time, labor, pesticides
- close to harvest protection
- one of the safer phosphate insecticides

Residue tolerance 0.75 ppm

GEIGY AGRICULTURAL CHEMICALS

Division of Geigy Chemical Corporation • Saw Mill River Road, Ardsley, N.Y.



ORIGINATORS OF DDT INSECTICIDES

NOW! Sprays really stick and stay



with revolutionary new

PLYAC*

Liquid Polyethylene Spreader-Sticker

It's a fact! Revolutionary new Plyac makes sprays stick better... last longer! With Plyac, you can stretch the time between sprays... do less re-spraying... increase the effectiveness of all your sprays.

Plyac is Allied Chemical's totally new liquid spreader-sticker made with polyethylene. Your sprays will last longer... work more

effectively... even in rainy weather when other sprays wash off easily!

Liquid form is easy to measure, easy to add. No mess. No fuss. You use only 2 to 4 ounces of Plyac in most cases for each 100 gallons of spray mixture. For extra performance from all your sprays, use Plyac this season!

*Trademark of Allied Chemical Corporation



GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

COLORFUL LABELS THAT SELL

WRITE
WIRE
OR
PHONE

CANS
HAMPERs + CRATES
AND
ALL CONTAINERS

BRANDAU CRAIG DICKERSON CO.
NASHVILLE 3, TENN. 304 10TH AVE. S.O. PHONE ALPINE 6-4151

TOMATOES

Tips on Growing Fireball

IT IS becoming increasingly apparent that new varieties may have cultural requirements different from the older standard varieties in use. As basic knowledge in genetics increases and plant breeding techniques improve, wider variations in habits and types of new varieties tend to occur. Consequently, we often must tailor cultural practices to conform to the needs of a new variety being tested. If we don't, a new type may never reach its potential performance, at least consistently.

A good example of this situation is illustrated by the Fireball tomato which was introduced about 1952 as an early market variety. It has been grown rather extensively in the Northeast in spite of somewhat erratic performance. In the recent search for an earlier processing variety for western New York, Fireball was scrutinized because of its earliness. It proved to have a number of characteristics that are desirable in a tomato for processing as well as for fresh market. Some of these are:

- Good internal fruit color.
- Relatively good resistance to cracking, blossom-end rot, and sunburn.
- Firm, well-shaped fruit that holds well on the vine after coloring.
- Ability to set large, concentrated yields allowing an early pick of 4 to 8 tons and a second pick of 10 to 20 tons. Like several other early determinate varieties, it develops flower clusters early and after the first flowering it averages about one cluster per one and one-half leaves as compared to three leaves for most other varieties.
- The relatively small vine permits easy picking.
- It sets fruit well under adverse conditions, particularly low night temperatures and low light intensity. This means Fireball often will set fruit when others fail, thus assuring consistently early production.

Faults of the variety include: sparse foliage; low acidity; susceptibility to the disorder known as gray-wall or blotchy ripening when it matures under cool temperatures; lack of disease resistance; and highly variable performance. When handled like other varieties it often produced miserable yields, small size fruit, and weak vines, and it became defoliated early by leaf diseases. Results of tests and observations over the past three years show that some of these faults can be corrected, particularly the sparse foliage and erratic nature.

AMERICAN VEGETABLE GROWER

The use of relatively young, tender transplants is the most important factor in obtaining good yields of medium-sized fruits. A direct relationship appears to exist between age of transplant (time from seeding to field setting) and fruit size. Sizes of .30 to .40 pound per fruit ($4\frac{1}{2}$ to $6\frac{1}{2}$ ounces) have been obtained with three- to five-week-old transplants and by direct field seeding. Average size tends to decrease, sometimes down to about .15 pound per fruit, as older plants are used.

Yields also are likely to be lower with older plants, but condition of the plants seems to be more important. Over-hardening, which results in slow resumption of growth, appears undesirable. Plants with open flowers at



Fred Cook, Genesee County, New York, got over 30 tons of fruit for fresh market and for processing from this field of Fireball. He used local and southern plants, applied 6 inches of water, sprayed 7 times for disease control.

time of field setting may set fruit soon after, resulting in seriously stunted plants and low yields. Such plants usually give a few extra early small tomatoes but this may not be economically justifiable even for early fresh market crops.

Having flowers on Fireball is serious because these flowers are likely to set fruit before the plant is established in the field and sufficient leaves have developed to supply food for both fruit development and plant growth. Flowers appear to develop earlier on plants grown at 50 to 60° F. than at 60 to 70° F.

For the processing crop, where extreme earliness is seldom a factor, relatively small, young (30 to 50 days from seeding), and fairly tender plants without flowers are advised. Growers must exercise care in transplanting such plants if good survival is to be obtained. Transplanting on hot or very windy days should be avoided. If possible, an irrigation shortly after transplanting may be very helpful during dry periods.

For the market crop where fairly high early yields are desired, plants 45 to 60 days old and relatively large may be best. Extra space in the flat (6 to 8 square inches per plant) helps

Why your dollar buys more with fmc vegetable packing equipment

YOU GET—EXPERT PLANNING FREE OF CHARGE

The right machine, the right line to do the job you want accomplished. That's what you may expect and get when you ask FMC for their free planning service. There is no cost for this service.



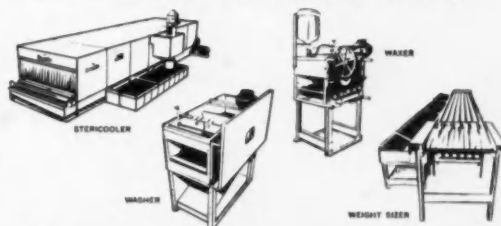
A fast, smooth-flowing packing line is a must in any profitable packing house operation. And the line that can run your produce thru quicker, more accurately with less help is worth more any day in the week. That is why more and more packing plants and houses are standardizing on FMC equipment. FMC equipment is tailor-made to handle produce with utmost gentleness. FMC equipment is custom-designed to move produce at maximum speeds with less human attention. You get more, yet you pay no more. So specify and buy the very best. Make your entire line FMC equipment.

YOU GET—FAST ON-TIME SERVICE

FMC has a network of experienced sales and service dealers. One is near-by your plant or packing house. You can be sure of fast service when you deal with FMC.

YOU GET—EVERY MACHINE YOU NEED FROM ONE DEPENDABLE SOURCE

Each machine FMC builds works better, lasts longer because FMC spends the time, and money to prove every unit before its placed on the market. Nothing is left to compromise. Nothing is left to chance. Be sure —get FMC equipment.



#V50-6

FOOD MACHINERY AND CHEMICAL CORPORATION

FLORIDA DIVISION—FAIRWAY AVE., LAKELAND, FLORIDA

Please send me literature on FMC Vegetable Packing Equipment.



Produce to be handled _____

NAME _____

ADDRESS (RFD) _____

CITY _____

STATE _____

NEW ORTHO® DIBROM* SOLVES INSECT CONTROL PROBLEM

Spectacular success of short-residual, fast-acting insecticide



PROBLEM: one of the largest vegetable-growing operations in the country needed effective, low-residual control of worms and aphids close to harvest time. Several other insecticides had proved unsatisfactory on broccoli, spinach and turnip greens, and time was short.

SOLUTION: on the advice of the local ORTHO Fieldman, an initial shipment of 5 tons of ORTHO DIBROM 4 Dust was ordered. Results of the dusting were so outstanding that over 400,000 lbs. of remarkable new ORTHO DIBROM have been used, to date, by this one farm.

DIBROM effective in 15 minutes! Insects dropped from broccoli plants—dead just minutes after contact with dust.



VEGETABLE GROWERS: here's how new ORTHO DIBROM helps you!

Fast, effective kill of the most troublesome insect pests—mainly by contact action. Controls loopers and other caterpillars, leaf miners, aphids, leafhoppers. Effective on insects in all stages of growth, except eggs. **Can be used within 4 days of harvesting.** ORTHO DIBROM has a residual life of only a few days. Safe to use on cabbage, lettuce, beans, Brussels sprouts, cauliflower, many more. **Safer to handle.** Much less hazardous than most phosphate and certain chlorinated hydrocarbon insecticides. **Compatible** with most fungicides and insecticides, except highly alkaline materials. **Available in two forms**—ORTHODIBROM 4 Dust or ORTHODIBROM 8 Emulsive. See your local ORTHO Fieldman about this remarkable new ORTHO insecticide.

* DIBROM IS THE TRADEMARK OF CALIFORNIA SPRAY-CHEMICAL CORP. FOR PHOSPHATE INSECTICIDE. ON ALL CHEMICALS, READ DIRECTIONS AND CAUTIONS BEFORE USE. T.M. REG. U.S. PAT. OFF. ORTHO.



Helping the World Grow Better

California Spray-Chemical Corp. • A subsidiary of California Chemical Co. • Richmond, California; Atlanta, Georgia; Washington, D.C.

**GROWER
OBTAINS
EXCELLENT
RESULTS
FROM**

Simplex SOIL and TISSUE TESTING

Simplex Outfits are available
in 3, reasonably priced, sizes
\$28.50, \$36.50, \$54.50
F.O.B. Norwalk, Ohio.



HILLSIDE GREENHOUSES, INC.

Located on intersection
of Routes 62 and 252

COLUMBIA STATION, OHIO

Telephone 2542

Mr. A. R. Gilbert, Manager
The Edwards Laboratory
Norwalk, Ohio

Dear Mr. Gilbert:

We have been a customer of your laboratory
for many years and wish to let you know of our
opinion of the Simplex method of soil testing
that you manufacture, the pH meters and solubility
ideas which you sell and our business relation-
ship with your laboratory.

The Simplex method of soil testing has
been used in our greenhouses for many years
with excellent results and we have found the
tests very simple and fast to make and easy to
interpret.

In addition to liking your Simplex Soil
Test Outfit, we like your firm. Our business
relationship has been the finest. In fact,
this opinion of your firm prompted us to order
our greatly needed pH meter and solubility
from you. The performance of these instruments
confirmed our high opinion of your laboratory.

Please accept our best wishes for continued
success of your laboratory.

Very truly yours,

Hillside Greenhouses, Inc.

Andrew L. Barber
Andrew L. Barber

EASY AND ACCURATE

Test instructions are simple and test results in
parts per million are easily converted to pounds
per 1,000 sq. feet or acre by use of tables.

MONEY BACK GUARANTEE

Write for full information and literature

THE EDWARDS LABORATORY

P. O. BOX 315-E

NORWALK, OHIO

announcing . . .



NEW John BEAN 10 RC AIRCROP ATTACHMENTS

new top performance features

- converts most any high pressure unit in-
to a modern, air-type sprayer
- sprays up to a 40-foot swath
- push button controls mount within easy
reach of tractor driver
- controlled, uniform spray delivery
- new, compact direct-drive design
- air outlet rotates 210° to take advantage
of wind conditions

ASK YOUR DEALER TO DEMONSTRATE,
WRITE FOR FREE 1960 ROW CROP CATALOG

John BEAN



DIVISION OF
FOOD MACHINERY AND CHEMICAL CORP.
LANSING, MICH. • ORLANDO, FLA. • SAN JOSE, CAL.

for BETTER SOIL PREPARATION SHRED (don't grind) with a KEMP SHREDDER

The KEMP improved principle of soil
shredding (not grinding) aerates
and retains the moisture and nutri-
ents for better growth. KEMP capac-
ities range from 2 to 40 cubic yards
per hour. Durability and dependa-
bility are built-in KEMP qualities
for trouble-free operation and year
'round economical service. Choose
KEMP for greater yield.



KEMP shredders start under \$100.00
(without power). The new literature
shows the different sizes in the line. Send
for your KEMP story today. Make the
KEMP comparison and you'll undoubtedly
choose KEMP—most people do.

RUGGED DEPENDABILITY KEEPS KEMP
FIRST IN SOIL & COMPOST SHREDDERS

KEMP MFG. CO.

Dept. 62, 1027 E. 20th St.

ERIE, PA.

to get larger, bushier plants without
excessive height or age. Growing
plants in a warm greenhouse (60° F.
at night) tends to permit more growth
before flowers develop. Having a
cluster of medium to large buds ap-
pears ideal for early production, but
removal of any open flowers is ad-
vised if severely stunted plants are
to be avoided.

Use of good transplants is the first
step to successful culture of Fireball.
In addition, it also pays to select
deep, fertile soils that are both perme-
able and well drained. High popula-
tions of 5000 to 7000 plants per acre
in rows 3 to 5 feet apart leads to
high early yields as well as efficient
use of the land.

Rapid growth is necessary after
transplanting to get as large a plant
as possible before heavy fruit setting
occurs. Using a starter solution, pro-
viding good soil moisture, and side-
dressing with 50 to 100 pounds of
actual nitrogen two to three weeks
after transplanting appear to be de-
sirable practices.

Very important is control of foli-
age diseases by a rigid spray program
starting soon after the first fruits set.
For the remaining cultural operations,
follow what is normally considered
good practice for tomatoes.

Other varieties in the early determi-
nate group of tomatoes seem to be
less sensitive to the condition of the
transplants, yet the suggestions out-
lined above for Fireball may help to
make them more reliable. Perhaps
some altering of practices even more
drastic than given here may be needed
to obtain maximum performance of
some of these varieties. Also keep in
mind the necessity for tailoring cul-
tural practices to the variety applies
to new varieties of other crops as well
as tomatoes.—Philip A. Minges and
Clark Nicklow, Cornell University,
Ithaca, N.Y.

Answer to YOU be the EXPERT!

(See page 14)

The first five or six blossoms on
cucumber plants are male flowers
and never will set fruit. Cucum-
bers and squash have separate
male and female flowers. If Tony
had examined his plants closely he
would have observed that those
early flowers had long slender
stems while the later formed fe-
male flowers had slightly thicker
stems with a definite bulge.

If these female flowers had
been dropping off without setting
fruit, Tony should have brought
in bees to pollinate the crop.

AMERICAN VEGETABLE GROWER



**YOU SHOULD KNOW HOW
THIS NEW OLIVER LEVEL-BED DIGGER**

Cuts power costs and saves crop damage

**More of your
"Most Wanted" features**

- ◆ Wide, level bed
- ◆ Full 65" flared digger blade
- ◆ Adjustable agitation
- ◆ Antifriction bearings
- ◆ Light-draft roller chains and oil-bath transmission
- ◆ Adjustable underclearance, wheel angle and discharge height

The two things you want most in a potato digger are built into the new Oliver No. 8: *light draft* and assurance of a high percentage of *bruise-free potatoes*. Here is a digger that was engineered to include all the features growers asked for in a nation-wide survey.

Just look at what you get: a welded frame that cuts upkeep costs by keeping working parts in constant alignment; antifriction bearings, roller-type drive chains and oil-bath gear case that *reduce your power requirements*; long, wide and flat elevator with easily adjustable agitation—gives you good cleaning in all kinds of soil conditions *without bruising* the crop.

Ask for a demonstration. Try the new Oliver No. 8 level-bed digger matched with an Oliver tractor. Try the slow, smooth pull of an Oliver 770 or 880 equipped with Power-Booster Drive and see how much better quality you get with **TEAMED-POWER**.



THE OLIVER CORPORATION
400 W. Madison St., Chicago 6, Illinois

GO BIGGER...GO BETTER — GET OLIVER TEAMED-POWER

THE PEOPLE'S CHOICE FROM COAST TO COAST

No other Sprayer Manufacturer offers so many selections. That's right—Rear Bros. elected to take care of the people's choice.

Choice of Pumps

from 8 gals. per min. at 400 p.s.i. to 22 gals. per min. at 500 p.s.i.

Choice of Tank Style

Pak-Tank® or Pul-Tank®

Choice of Tank Size

100 to 400 gallons

Choice of Axle Types

All fully adjustable for width, tandem, duals, high clearance, etc. and skids.

Choice of Engine Drive or Power Take-off

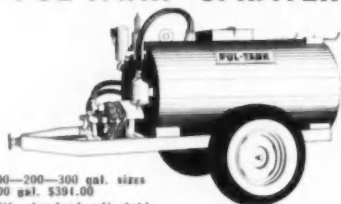
All steel, plastic-coated tanks. All the ruggedness that only steel can give. All the protection of epoxy plastic tank lining. The steel sand-blasted to white metal and the plastic bonded with a heavy coat for years of protected life. No fear of chafing or cracking as in non-steel tanks. No worry about sunlight or solvent action.

PAK-TANK® SPRAYER



The original PAK-TANK®—100 gal. —priced from \$319.00 with plastic coated tank. \$289.00 with uncoated tank. 8 gal. per min. at 400 p.s.i.

PUL-TANK® SPRAYER



100—200—300 gal. sizes
100 gal. \$391.00
with standard adjustable axle, telescoping tongue, plastic coated tank, 8 gal. per min. pump at 400 p.s.i. Includes power take-off shaft, 15 inch wheels.
200 gal. tank, same equipment, \$420.00
For 4 piston 10 gal. per min. pump at 500 p.s.i. add \$31.50.
For high-clearance row crop attachment add \$45.00
3 section vegetable booms, 4 row, with individual section control \$121.50. Complete—ready to attach to any of the above machines or your existing sprayer. You'll get a bang out of our boom—no other like it on the market.

POST HOLE • TREE PLANTING



GUARANTEED
Quickly attached—adaptable to most tractor models.
Heavy steel gears... rugged plow steel cutting edges.

Dealers Wanted

REAR'S Mfg. Co., Inc.

755 River Avenue Eugene, Oregon

Rear's—the last word in farm equipment.
We also manufacture Smooth Water Filled Rollers—Bean Stringers—Bean and Tomato Stake Presses—Wire Winders—Kimball Weeder.
All of our equipment completely assembled.

MELONS

Nematode Control

“RIGHT up there all the plants were dying. The ground under the plants was bulging and cracking. When you pulled the plants out of the ground the roots looked like they were sweetpotatoes instead of cantaloupes. None of the farmers around here knew what the matter was, but they called it club root. The plants barely stayed alive—never ‘applied’ out. And if there was a dry spell, they just withered and died.”

This was Howard Humphries speaking. He was describing the economically disastrous experience of the truck farmers near Salisbury on the Eastern Shore of Maryland. As he talked, he pointed to the crest of a small slope on his 100-acre farm where he has spent most of his life growing string beans, tomatoes, cantaloupes, watermelons, cucumbers, and sweetpotatoes.

In the middle 1950's, he and his fellow truck farmers were giving up growing these valuable vegetable crops on large parts of their farms because of “club root.” Each year the blighted areas grew larger and larger. To eke out a living they had to plant more and more of their land in corn and soybeans which gave them a much smaller cash income.

Investigations at this time by Dr. J. G. Kantzes and other plant pathologists of Maryland Agricultural Experiment Station at Salisbury disclosed the “club root” was caused by a species of nematode, *Meloidogyn incognita acrita*. This is a tiny, almost microscopic worm that penetrates roots and sucks away a thrifty plant's vitality, making it barely able to set fruit and resist drought.

At that time the only known way to fight nematodes was to fumigate the land with a nematocide several weeks or months before planting. But this required special equipment and was almost prohibitively expensive. As a result very little fumigation was done and the infested areas got bigger and bigger.

Inspired by successful tests that had been conducted on strawberries, Dr. Kantzes began experimenting at the Salisbury station with Nemagon soil fumigant mixed with fertilizer which could be applied as a side-dressing at the same time the vegetable seeds were being planted. If this worked, it would not only effectively control root knot but would have the advantages of eliminating an extra operation and the need for costly special application equipment.

In 1957, Dr. Kantzes got Humphries to help with a field test of the new Nemagon treatment on his cantaloupes. A commercial fertilizer distributor mixed 25% Nemagon granules at the rate of 35 pounds to 500 pounds of fertilizer. This was applied at seeding time at a depth of 3 to 4 inches at a rate of 500 pounds to the acre with conventional fertilizer side-dressing equipment attached to a planter or tractor. This was equivalent to applying ½ gallon of Nemagon liquid per acre.

The row tests on the Humphries' farm were so encouraging they were repeated in 1958. In 1959, the treatment was tried out on larger plots of 3 and 4 acres each. The results demonstrated conclusively that nematodes could be controlled economically in this way, and the treatment used on the Humphries' farm has now been recommended for watermelon, cucumbers, and all the other cucurbits.

In a formal paper on their experiment which was printed recently in a scientific magazine, Dr. Kantzes and his associates, W. R. Jenkins and



Untreated plant on left shows effect of root-knot nematode on root system. Healthy plant on right received Nemagon-fertilizer treatment.

R. A. Davis, reported the severity of the nematode infestation had been reduced on an index number basis from 4.4 to 1.4. To get an index number of 1, 100% of the roots must be clean of galls. Therefore, an index number of 1.4 translates to almost 100% control.

But no such scientific measurement was needed to convince Humphries and his neighbors, for it was obvious upon even casual observation which plots had been treated and which were non-treated control plots. They could tell by plant vigor without examining the roots.

In fact, Humphries has no hesitation in crediting the new Nemagon fertilizer method of treatment developed by the Agricultural Experiment Station at Salisbury with virtually saving his farm.

“I'm sure glad Dr. Kantzes asked us to try out this new treatment,” he says. “Now the plants do well wherever this is applied.”

THE END.

AMERICAN VEGETABLE GROWER

**FOR REAL VEGETABLE
VITALITY!**



Kill crop destroying nematodes with Nemagon® Soil Fumigant

Grow healthy, vigorous vegetables this season by knocking out nutrition-robbing nematodes with powerful, long-lasting Nemagon soil fumigant.

Nemagon soil fumigant is easy to use. It's available as a liquid for soil injection equipment and in granules for use as a mix in fertilizer. Once in the soil it becomes a potent gas—goes right to work and kills nematodes as it spreads. One treatment

protects vegetables from nematode infestation throughout the growing period. For best results follow label directions carefully.

This season, grow healthy, vigorous vegetables. Get Nemagon soil fumigant now and knock out root-choking nematodes. It's available from your pesticide dealer. See him today.

SHELL CHEMICAL COMPANY

AGRICULTURAL CHEMICALS DIVISION
110 West 51st Street, New York 20, New York



PLANT GROWER'S CORNER

By RAY SHELDRAKE

MAY is the month that plant growers have looked forward to all season. In many southern areas, a large volume of plants moved out in April but in the northern states, May is the period of large volume.

The plant growing business is no different from any other business in that it takes large volume, handled efficiently, to make the largest net income. Unfortunately, some plant growers get to feeling that they have too many plants and no way to move them.

Don't be afraid to advertise and run specials. Most people are anxious to know where they can get well grown plants and your only method of letting them know is by advertising. Probably some of the best money you can spend will be in large newspaper ads and in radio advertising.

Some plant growers run a week-end special, perhaps a free pak with every five purchased. This is an excellent come-on and will certainly help to move volume. Large, well grown, potted tomato plants of a good hybrid also make an excellent advertising gimmick. These might be in 3-inch peat pots or even larger size clay or plastic pots.

To get things off to a good start, many growers will have an open house some weekend early in the gardening season. If you hold an open house, try to have a few of the different varieties in bloom and on display—it will help sales. Have posters hung around in the sales area that show the colors of the different varieties. Most seedsmen will supply their customers with these posters.

It is not too late to sow seeds of many of the annual flowering plants. Excellent tomato plants can be produced in five weeks from seed sown around the first part of May. Plants come along much faster during this month of good light and better temperatures. Many years it is difficult to find prime plants after June 1. Oftentimes, sales will be very good even through June. Petunias seeded around the first of May will make salable plants by the end of June if given plenty of water and nutrients. These fresh plants produced late in the season will boost your total bedding plant sales.

Many insects become active now that the weather has warmed up, and a regular spray program with a good insecticide to control insects, especially aphids, will prove helpful. Field grown pansies are subject to attack by aphids and a regular

spraying will give the foliage a much greener color.

Often, virus diseases are spread from weeds growing around the greenhouse to plants such as tomatoes and peppers. Why not make a definite effort this year to spray the area adjoining your greenhouse with a residual weed killer that will keep down these troublesome weeds? It is not possible to make a general recommendation so check with your state extension service for recommendations on weed control.

Some of our most enthusiastic bedding plant growers get a great deal of joy and advertising by having a small trial grounds near their sales building. This can be planted so that it is in clear view of highway traffic. An attractive sign over the area welcoming visitors is helpful.

It may be difficult to keep these trial grounds weed free and looking neat but I believe it is worth the effort to treat the soil in this area with a soil sterilant for weed control and better growth of your plants.

Many growers have tried Vapam or VPM soil sterilant. This will prove satisfactory if the soil is worked up into a good friable condition and has adequate moisture for seed germination. The soil temperature should be about 60° F.

Recent work with this chemical has indicated that it pays to cover the surface of the soil for 24 hours

VAL-PEAT® POTS

THE BETTER, STURDIER PEAT POT—AMERICAN MADE - - "FULL DIMENSIONAL." Val-Peat Pot sizes are inside top diameter "full dimensional." Our new 2 1/4-in. square Val-Peat Pots hold 42% more soil than some other peat pots of the same stated dimension. Our 2 1/4-in. round Val-Peat Pots also hold more soil than other brands.

**ORDER VAL-PEAT POTS AND RECEIVE FULL MEASURE.
TOMATOES-PEPPERS-MELONS-CUCUMBERS-EGG PLANTS**

VAL-PEAT POT ORDERS 150 LBS. AND OVER PREPAID IN U.S.A.

(Packed in original cartons only.)

VAL-PEAT POTS—ROUND SIZES

Inside Top Dimension of Pot	Quantity	Number Pots per Carton	Approx. Wt. of Carton	Price per 1000
S-1428A 2 1/4-in. Diameter	2,000 to 18,000 20,000 to 74,000	2000	28 lbs.	\$ 7.75
Round	76,000 and over			7.25
S-1428B 3-in. Diameter	1,000 to 9,000 10,000 to 49,000	1000	27 lbs.	6.75
Round	50,000 and over			13.75
S-1428C 4-in. Diameter	500 to 2,000 2,500 to 10,000	500	33 lbs.	12.75
Round	11,000 and over			11.50
S-1428E 4-in. Round Azalea	500 to 2,000 2,500 to 9,500 10,000 and over	500	30 lbs.	28.75
				26.25
				24.75

VAL-PEAT POTS—SQUARE SIZES

Inside Top Dimension of Pot	Quantity	Number Pots per Carton	Approx. Wt. of Carton	Price per 1000
S-1428 1 3/4-in. Diameter Square	2,500 to 17,500 20,000 to 70,000 72,500 and over	2500	28 lbs.	\$ 6.90
				6.40
				5.90
S-1428F 2 1/4-in. Diameter Square	2,000 to 18,000 20,000 to 74,000 76,000 and over	2000	39 lbs.	10.50
				9.75
				9.00
S-1428D 3-in. Diameter Square	1,000 to 9,000 10,000 to 49,000 50,000 and over	1000	38 lbs.	17.25
				16.00
				14.75

LITE-WEIGHT No. 10 TWO SQUARE SIZES—2 1/4 and 3-inch

For some growing purposes, these lighter weight pots are preferred.

Inside top Dimension of pot	Quantity	pots per Carton	Wt. of Carton	Price per 1000
2 1/4-in. Square No. 10	2,500 to 17,000 20,000 to 72,500 75,000 and over	2500	35 lbs.	\$7.50
				7.00
				6.50

Inside top Dimension of pot	Quantity	pots per Carton	Wt. of Carton	Price per 1000
3-in. Square No. 10	1,000 to 9,000 10,000 to 49,000 50,000 and over	1000	32 lbs.	\$14.50
				13.25
				12.00

VAUGHAN'S SEED CO.

**CHICAGO 6, 601-609 W. Jackson Blvd.
NEW YORK 13, 85 White St.**

© Reg. U.S. Patent Office



with very thin plastic to hold the vapors of the chemical in and keep the surface of the soil moist. The general recommendations are 1 quart of the material in 5 gallons of water per 100 square feet, but this may vary with local areas so check with your local dealer or extension worker.

Another material that does an excellent job is methyl bromide, which is marketed in 1-pound pressure cans sufficient for 100 square feet. This material has the same temperature and moisture requirements. Methyl bromide should be injected under a gastight plastic cover. After 24 hours, remove the cover. A special applicator is available at a reasonable price.

Be sure to follow the recommendations given by the manufacturers of soil fumigants on the waiting period required before planting.

One note of warning—salvia does not seem to be tolerant of methyl bromide and caution should be used in using this chemical when fumigating soils where salvia will be planted.

THE END.

APPLYING PLANT FOOD

(Continued from page 11)

applied broadcast. Obviously, this effect is of much greater economic importance on acid and/or heavy soils, where fixation capacity is high, than it is on less acid and/or light, sandy soils where fixation is low.

It is obviously very expensive to build up soil fertility to such high levels that response to extra fertilizer will never be obtained. This system (fertilizing the soil) is commonly used by market growers, home vegetable gardeners, and by nurserymen, but it has usually proven economical only under the intensive cultural procedures followed by these operators.

Practically all field crops and most of the vegetables which are grown for commercial processing are grown under a less intensive system where fertilizer is specifically applied for each crop according to the requirements of that particular crop.

In any event, it is important to test the soil to determine its fertility and lime status. It is particularly important to test for pH or acidity. Where a higher pH is needed, lime should be thoroughly mixed with the soil for most effective response, except in those limited cases where an overall increase in soil pH is not desired. In these situations a localized band of lime may be applied with the seed.

Any discussion of crop growth and root development must include



It's easy with these colorful baskets, cartons or containers that give your tomatoes and other vegetables stand-out eye appeal . . . more protection . . . better identification of your own brand name.

A complete line of standard or special packaging, including baskets for 2, 4 and 8 quarts; wood or wire handles and ventholes op-

tional. Easy to set up, they're shipped flat for easy storage.

Make Planned Packaging your key to increased sales. Call in a Packaging Corporation produce packaging expert for a free consultation on your packaging problem. Prices and samples upon request. For complete information contact the nearest division office.

Planned Packaging moves produce

Packaging Corporation of America

Administrative Offices:

American Box Board Division, Grand Rapids, Michigan • Central Fibre Products Division, Quincy, Illinois • Ohio Boxboard Division, Rittman, Ohio

**NEWEST METHOD IN
WEED CONTROL**
**CULTIVATES SAFELY
BETWEEN EACH PLANT**
**WHY RISK YOUR CROP
WITH CHEMICAL
WEED CONTROL?**



NOTE COMPLETE CULTIVATION
Write for descriptive literature and
prices now.

BUDDINGH InROW WEEDER Co.
Box 54 Dutton, Mich.

save time, spray materials
get thorough protection with



**AIRCROP
ATTACHMENTS**

Model 15-RCG
Attachment

It's easy to convert your high pressure sprayer into an efficient, air-type unit with John Bean attachments. Modern air spraying gives you thorough, uniform crop protection and greater rate-of-work capacity with real savings in time and spray materials. For medium-to-large acreages, the Model 15-RCG sprays a swath up to 60 feet, reduces wheel rows from 50 to 75 per cent. For smaller acreages, the Model 10-RC sprays up to a 40-foot swath.

Ask your John BEAN Dealer to demonstrate!

**John
BEAN**
DIVISION OF
FOOD MACHINERY AND CHEMICAL CORP.
LANSING, MICH. • ORLANDO, FLA. • SAN JOSE, CAL.



PROMOTE HEALTHY BEANS • SWEET CORN • PEAS & POTATOES WITH **SINOX PE**

It will improve your yield per acre
by controlling weeds, and assure you
full crop profits!

Used as a pre-emergence weed killer, Sinox PE serves a double purpose. It conserves soil moisture and fertilizer for the crop. It eliminates the need for costly hand weeding operation all season long... actually lowers your cost of production.

Your local dealer handles SINOX PE. Ask for it by name.



STANDARD Agricultural CHEMICALS, INC.
HOBOKEN, NEW JERSEY • SACRAMENTO, CALIFORNIA

Send for this
FREE Booklet
Your guide to air carrier spraying.

BESLER CORP.

4053 Harlan St. Emeryville, Oakland 8, Calif.



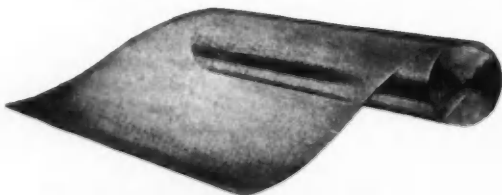
The finest...
VEGETABLE CULTIVATOR
...in the field

TRY IT AT OUR EXPENSE

WRITE OR CALL FOR FURTHER DETAILS

KIRBRO CO. 131 SCHLEY ST. NEWARK 8, N. J.
Waverly 3-4635

POLYETHYLENE Transparent **FILM**



**SPECIAL FOR MARKET GROWERS
BLACK MULCHING GRADE**

.0015"—3 ft. x 250 ft., \$4.00 a roll, net
.0015"—3 ft. x 500 ft., \$7.50 a roll, net
.0015"—3 ft. x 1,000 ft., \$15.00 a roll, net
.0015"—4 ft. x 1,000 ft., \$20.00 a roll, net

"We ship same day"

YOH & HOOKER
BOX 1165 • YOUNGSTOWN, OHIO

Sizes and Prices

Our Polyethylene film is .004 mil. thick and this is medium weight, and cost considered, is the most satisfactory.

3 ft. wide by 100 ft. long	\$6.00 a roll
4 ft. wide by 100 ft. long	\$8.00 a roll
6 ft. wide by 100 ft. long	\$12.00 a roll
8 ft. wide by 100 ft. long	\$16.00 a roll
10½ ft. wide by 100 ft. long	\$21.00 a roll
20 ft. wide by 100 ft. long	\$40.00 a roll
6 Rolls to 9 Rolls	Deduct 20%
10 Rolls or More	Deduct 25%

Big Sample Bargain

Big useable sample piece 10 ft. long by 3 ft. wide. Send \$1.00 cash, check or stamps for this big sample by mail, postpaid

mention of soil organic matter. The value of active organic matter in establishing and/or maintaining desirable physical and chemical properties of soils is well recognized. It should be noted that there are three common sources of organic matter available to vegetable growers—crop residues from the vegetable itself, cover crops and/or weeds, and manure.

Organic matter increases aeration and promotes drainage of excessive water while, at the same time, it helps retain a large amount of available water in the soil. It reduces surface crusting and therefore promotes better seedling emergence.

A cover crop planted during the last cultivation or after harvest of

Readers who desire a more detailed discussion of fertilizer placement may obtain a free copy of the recommendations of National Joint Committee on Fertilizer Application entitled *Methods of Applying Fertilizer* from National Plant Food Institute, 1700 K Street, N.W., Washington 6, D.C. This pamphlet was prepared by a group of fertilizer research specialists and summarizes present fertilizer placement recommendations for the wide range of crops, soils, and climates found in the varied agricultural areas of the United States.

a vegetable crop will take up excess nutrients and "store" them against leaching during the winter. When turned under the next spring, these nutrients are released from the cover crop as it decays in the soil during the growing season of the following cultivated crop.

Transpiration of the cover crop removes surplus water from the soil early in the spring so that the soil can be plowed earlier than if no cover crop is present. At the same time, roots from the cover crop loosen the soil and give it desirable aggregation and structure, thus forming a better seed bed.

The preceding facts indicate the value of cover crops and soil organic matter. The practice of applying a major part or even all of the commercial fertilizer to the preceding cover crop and applying only a minor part or none at all to the cash crop following the cover crop has been very effective under the soil and climatic conditions of southern New Jersey. This practice, however, may not necessarily be desirable in other vegetable growing areas of the United States where soils and climate are different.

It should be pointed out that adding a given amount of organic matter to a sandy soil containing 1 to 1.5% organic matter (typical of coastal plain areas) would logically have a greater beneficial effect on

AMERICAN VEGETABLE GROWER

the soil than adding the same amount of organic matter to a soil containing 3 to 4% organic matter (commonly found in upstate New York). Sandy soils have lower available water-holding capacities than soils with larger amounts of silt and clay. Thus organic matter, which has a very high available water-holding capacity, is probably more beneficial in the sandy soils than it is in heavier soils.

When any vegetable crop, such as tomatoes, is heavily fertilized and only the ripe fruit harvested, a large amount of organic matter remains in the roots, tops, and unpicked green fruit to be returned to the soil the same as in a cover crop. It is also important to remember that the nutrients in a cover crop, although in different forms, originally came from the soil or from added fertilizer. Thus the cover crop is not adding plant nutrients—it is merely conserving them.

For the most economical response to fertilizer applications, it has been demonstrated time after time that a band of fertilizer high in phosphorus should be applied relatively close to the seed or transplant. This band should probably be 1 to 2 inches to the side of the row and approximately 2 inches below the level of the seed, although the exact placement may vary depending on the crop and the soil.

The remainder of the fertilizer should be applied fairly deep so it will be in relatively moist soil when summer droughts develop. It may be broadcast before plowing so it will be plowed under, it may be placed at the bottom of the plow furrow at time of plowing, or it may be drilled in deep with a fertilizer grain drill prior to planting the crop. In any event, it is important to place the bulk of the fertilizer as deeply as possible so that it will be in moist soil from which roots can extract it.

In conclusion, it may be stated that the article, *Where You Place Fertilizer Will Govern Crop Size and Quality*, in the April, 1959, issue of this magazine is an excellent discussion of the principles of fertilizer placement. These principles apply equally well to both field and vegetable crops. Proper placement is relatively more important for short-season crops than it is for long season crops, and many vegetables (peas, spinach, lettuce, snap beans, etc.) are classified as short-season crops, whereas only a few field crops fall in this category. THE END.

Construction details for Cornell University plastic panel greenhouse, and reprints of current articles on plastic greenhouses are available from AMERICAN VEGETABLE GROWER, Willoughby, Ohio, for 50 cents a set.

ONE TIME JACK POTS

Better, Sturdier, Peat Pots



SHAPE HOLDING PEAT POTS

Made from the finest horticultural peat moss with nutrients added which are released slowly to insure sturdy, healthy growth.

4 in	cs.	Standard Wt.	Azalea Wt.
500 to 2,000	500	\$28.75M	\$28.75M
2,500 to 9,500		\$26.25M	\$26.25M
3 in		Square	Round
1,000 to 9,000	1,000	\$17.25M	\$13.75M
10,000 to 49,000		\$16.00M	\$12.75M
2 1/4 in		Square	Round
2,000 to 18,000	2,000	\$10.50M	\$7.75M
20,000 to 74,000		\$9.75M	\$7.25M
1 3/4 in		Square	
2,500 to 17,500	2,500	\$6.90M	
20,000 to 72,500		\$6.40M	

NEW!!! Lower Cost THINLINE

3 in		Square	Round
1,000 to 9,000	1,000	\$14.50M	\$13.00
10,000 to 49,000		\$13.25M	\$12.00
2 1/4 in		Square	Round
2,500 to 17,500	2,500	\$7.50M	\$7.00
20,000 to 72,500		\$7.00M	\$6.50

PRICES PREPAID on 150 Pounds or more anywhere within U. S. A., excluding Alaska

"Write for prices on carton of 100 pots and for quantity prices on regular packs".

Visqueen Polyethylene Film

3' x 1,000'	.0015 Gauge Black Only	\$13.92	20' x 100'	.004 Gauge Black and Clear	\$24.74
4' x 1,000'	.0015 Gauge Black Only	18.56	32' x 100'	.004 Gauge Black and Clear	39.58
4' x 200'	.002 Gauge Clear	5.19	1' x 300'	.006 Gauge Black Only	5.56
12' x 200'	.002 Gauge Clear	14.84	10' x 100'	.006 Gauge Black and Clear	18.56
3' x 100'	.004 Gauge Clear	3.71	16' x 100'	.006 Gauge Black and Clear	29.70
10' x 100'	.004 Gauge Black and Clear	12.37	32' x 100'	.006 Gauge Black and Clear	59.39

Order now and write Department A for free literature

A few uses are: Mulching plants; green-houses; cold frames; fumigating soil; covers for silage pits, hay stacks, machinery, equipment, supplies; enclose work areas; vapor and moisture seal in building construction and cement work; flashing.

THE DAO CORPORATION

P.O. Box 659 Terre Haute, Indiana

SENSATIONAL!

The Choice of Plastic Users for Best Results



THE PLASTIC GREENHOUSE

WITH THE LIFETIME ALUMINUM FRAME

IDEAL GROWER SIZES: 11, 20, and 25 Ft. Widths. Lengths available in Multiples of 8 Ft. . . . from 32 Ft.

Please write for Catalog and Price Sheet
LORD & BURNHAM (Div. of Burnham Corp.)
Dept. O Irvington, N. Y. • Des Plaines, Ill.
St. Catharines, Ont., Canada

Gro-Mor Another Fine Product of Lord & Burnham

SAVE DOLLARS... HOURS Every Day with the Completely NEW Insta-Hitch System

Switch Implements in Seconds
Without Leaving the Tractor Seat

For the first time the back-breaking, time-consuming chore of changing implements has been reduced to a "flick of a lever." Now you can switch three-point or tongued implements swiftly and safely . . . saving valuable time and labor cost.

Insta-Hitch system features a triangular tractor unit which permanently bolts onto the three hitching points of the tractor. Matching couplings attach to the implements. Just back up until the hook on the tractor coupling engages the matching unit of the implement. Raise the hydraulic arms, push the locking lever and drive away.



Insta-Lift Fork Attachment

A low-cost carry-all that transports loads to the weight capacity of the tractor hydraulic system. Perfect for pallet loading.

Write for Name of Nearest Distributor or Dealer

INSTA-HITCH
DIVISION
Weather-Seal, Inc. Barberton, Ohio



SAVE TIME SAVE LABOR
Do a **BETTER** and **FASTER** job
of **SPRAYING** and **DUSTING**

with our KWH shoulder mounted **MIST-BLOWER** and **DUSTER**, powered by gasoline engine (1 and 3 HP Models).

TRACTOR MODELS: 6-36 HP.

For literature and prices write to:

VANDERMOLEN EXPORT CO.
316 Bloomfield Ave. NUTLEY 10, N.J.

CUCUMBER YIELD

(Continued from page 12)

widths of 80, 60, and 40 inches with plants spaced 18 inches apart in the row resulted in yields of 296, 390, and 568 bushels per acre respectively.

In the practice of closer spacing, some growers have gone too far. In 1959 plants were spaced so close together in some fields that in this exceptional growing season it was difficult to find the fruit because of heavy vine growth. The heavy growth also resulted in fruit breakdown. Under Michigan conditions it is perhaps most profitable to space plants 12 inches apart in rows 40 to 48 inches apart.

Use of disease-resistant varieties is a must. The average yield in 1950 was only 30 bushels per acre because of scab or spot rot. Since mosaic and scab have become severe, only dual resistant varieties such as Wisconsin SMR-12, SMR-15, SMR-18, and SMR-58 are recommended.

An intensive cucumber breeding program is being conducted by Dr. Clinton Peterson, of Michigan State University. His main objectives are to incorporate disease resistance into F_1 hybrid cucumbers. In addition, he has some hybrids which look promising for machine harvest.

Successful growers plant cucumbers when the soil temperature is 60° F. or above and when there is enough moisture for rapid germination. The faster the cucumbers emerge, the less chance there is for a poor stand. It is difficult for plants to make up for a poor start due to delay or uneven seed germination.

Do not plant seed deeper than 1 inch and plant only deep enough so there is sufficient moisture for germination.

Any soil which is well drained and has a pH of 6.0 to 6.8 is satisfactory for cucumbers. Sands or light, sandy soils are fine if irrigated. Many of the best cucumber areas are located on light, sandy loams which would not economically produce general farm crops.

Research has shown that of all the

vegetables, cucumbers are one of the best at foraging for nutrients. On soils testing high in nutrients, small quantities of fertilizer are adequate. Errors in culture other than using insufficient fertilizer are usually more important in limiting production.

Cucumbers are easily injured by having fertilizer placed with the seed, such as is done by split-boot planters when operated at fast speeds. They are also injured if a band of fertilizer is placed under the seed.

Under Michigan conditions cucumbers have responded most to the element phosphorus. If no soil test is available, adequate nutrients are supplied if 300 to 500 pounds per acre of a 5-20-10 or 4-24-12 are applied. Use the lower rate if it is possible to apply the fertilizer in a band at least 2 inches below and 2 inches to the side of the seed.

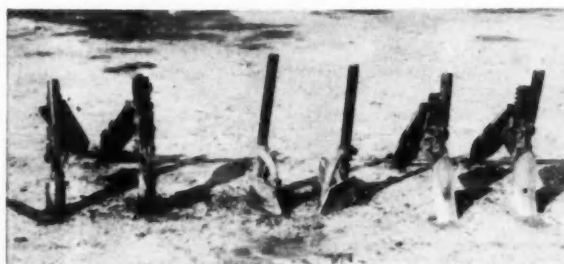
When the soil test is known, the rate and ratio can be altered and even decreased if there is a high reserve supply of nutrients.

Supplemental applications of nitrogen have not been necessary unless the season is either cold or very wet. Foliar feeding has not paid off where the suggested initial applications of fertilizer have been applied.

The purpose of cultivation is to control weeds and to provide aeration if a hard crust has been formed. When roots are cut during cultivation, the crop is injured and the yield may be reduced. Some of the best growers do their own cultivating, because they realize the injury that can be done by a "tractor jockey."

Three cultivation instruments used next to the row have been studied. It was observed that the shovels must go too deep, 3 to 5 inches, in order to cover small weeds in the row. They do a good job only at the first cultivation. In one test they decreased the yield about 20% when used up to the time the vines tipped over.

The sweeps are excellent for cutting weeds off, but in order to throw soil into the row, they must be



Half sweeps, scrapers, and shovels, left to right, used for cultivating cucumbers in three-year test.

adjusted so they go almost as deep as shovels.

The scrapers do the best job of throwing soil into the row, while going only 1 inch deep. This is because of the large edge in contact with the soil surface.

Besides higher yields and better quality fruit, irrigation also offers crop insurance during dry years. In addition, if it is dry at planting time, one irrigation will insure good "come up" and will result in efficient use of insecticides and the herbicide Alanap-3, if it is used.

Most important, perhaps, is that most of the benefits from irrigation cannot be realized unless the other cultural practices mentioned are followed.

Mexican nationals have proven in Michigan to be the best and most dependable labor for the backbreaking harvesting job. This type of labor, however, has become more difficult to obtain every year. The obvious answer is to harvest by machine.

Two harvesting machines appear most promising, one developed by Chisholm-Ryder and the other by Michigan State University. About 25 Chisholm-Ryder machines will be tested throughout the country this year. This machine picks from both sides of the row. Oats must be planted as marker plants at time of seeding so the center of the row can be located. Care must also be taken not to turn the vines back into the row prior to harvest. After the harvest starts, the machine keeps the vines in position.

The MSU machine works only from one side of the row. The row is trained with an air-blast while cultivating. The machine itself then trains the vines while harvesting. The MSU harvester shown in photo will be modified so that it can be pulled or attached to a three-point hitch. This should reduce the total cost for a harvester unit.

Two of the major problems in machine harvesting are removing the fruit from the base of the plant and minimizing plant injury, which is difficult considering that the plants must be harvested every few days.

The backbreaking job of hand harvesting pickling cucumbers will soon be eliminated by the mechanical harvester. But there is still no machine in the foreseeable future that will replace the efficient vegetable grower.

THE END.

Onion consumption in the Balkan countries is 60 to 70 pounds per person; in the U.S. it's 14 pounds per person.

MAY, 1960



KING FISH

"Organico del mar"

Better Yields

Nematode Control

FERVE, S. de R.L. de C.V.
Bravo 202, Nte. Culiacan, Sin., Mexico
K. C. MATTSON CO.
2460 N. Chico Ave., El Monte, Calif.

HOW MUCH RAIN?

Now you can know with a

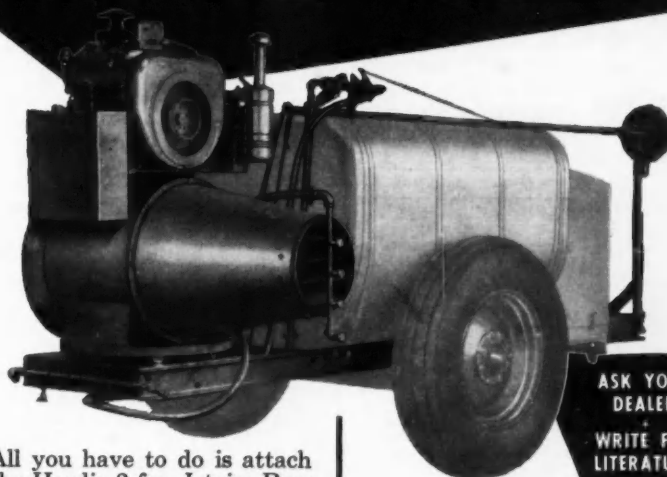
Tru-Chek® RAIN GAUGE

A precision instrument used by universities, weather bureaus and growers. Measures 1/100th of an inch to 6 in. Made of durable plastic with aluminum bracket. Clear, easy-to-read scale, 13-in. long. Top opening 2 1/2 x 2 1/4 inches. \$3.95 postpaid.

Discounts to Jobbers and Dealers

TRU-CHECK RAIN GAUGE CO. Albert Lea, Minn.

NOW—YOU CAN MAKE YOUR OWN ROW CROP SPRAYER



ASK YOUR
DEALER
WRITE FOR
LITERATURE

- All you have to do is attach the Hardie 2-fan Jetaire Row Crop attachment to the frame of any sprayer. It comes complete with a heavy duty air cooled engine and controls.
- Covers 14 to 20 rows of potatoes, tomatoes, etc. with a controlled blanket of mist. Sprays 100 to 120 acres per day.
- High velocity air—from two, 26 inch axial flow cast aluminum fans puts the spray where you want it, regardless of wind.
- Air discharge opening rotates through 220 degrees, giving absolute direction control and complete coverage on any kind of ground. You can spray wherever crops can grow.
- Easy reach controls at tractor seat.
- Adjustable air outlet in discharge housing provides control of air on plants close to sprayer.

HARDIE

AGRICULTURAL SPRAYING EQUIPMENT

• SOLD AND SERVICED



OUR 62nd YEAR

1898-1960

The Hardie Mfg. Company, Inc.,

Dept. AV
730 S. Main Street
WILKES-BARRE, PA.

Please Send Me

☐ Jetaire literature

☐ Have Salesman call

NAME _____

ADDRESS _____

CITY _____

STATE _____

Open Ring
RUBBER BANDS
 for YOUR fresh
 Vegetables
 Over 300 Varieties
 Sizes & Colors



SEND FOR FREE
 SAMPLES

ALLIANCE RUBBER CO.

Alliance Ohio Franklin Ky. Hot Springs Ark.

EYE GLASSES by MAIL As low as \$1.25

WRITE for FREE
 CATALOG with 14
 LENS SAMPLE CARD

Thousands of
 Customers
 Est. 1939



QUALITY READING — or BIFOCAL GLASSES for FAR and NEAR
 Recommended for folks approximately
 40 years or older who do not have astig-
 matism or disease of the eye, and who
 have difficulty reading or seeing far.
ADVANCE SPECTACLE CO. Inc., Dept. VG-4
 537 So. DEARBORN ST. CHICAGO 5, ILLINOIS

**SPECIAL—AGRI-TOX
 MASK & GOGGLES**
\$7.80 Complete
 Mask \$5.55 Goggles \$2.25
 Also complete line of
 equipment and insecticides.



Free Catalog
HUB STATE CO.
 1255 N. Windsor, Indianapolis, Ind.

Only the rugged 26" ROOF VP MOWER
 with EXCLUSIVE
VARIABLE PITCH BLADE ACTION
 gives you maximum
 cutting efficiency!
 lets you adjust blade pitch
 instantly for any cutting job.



PLUS • OIL BATH GEAR DRIVE
• RUGGED UNIT CONSTRUCTION
• VARIETY OF ATTACHMENTS
• CHOICE OF ENGINES



CUTS WEEDS and BRUSH
 MOWS LAWNS • SAWS TREES
 HEDGES LEAVES
NOW get
 a free
 Action Test
 on your
 own weeds and lawn at
 dealers displaying this
 Demonstration Day Emblem

Write for FREE
 FLYER FOLDER
 and Dealer Name
 ROOF MFG. CO., Franklin, I.O. 10

NEWEST IMPROVED MODEL M-2
SCARE-AWAY



**Thunderclap
 EXPLOSIONS
 Clears Fields
 of Birds...**

Loudest and most reliable bird and animal scare
 device ever made. Operates on carbide or acety-
 lene, no wick. Retail cost is low. Operates for less
 than 15c per day. DEALER INQUIRIES INVITED.
 Warehouse stocks in: San
 Francisco, New Orleans, Or-
 lando, Chicago, Baltimore, and
 Greenville. No waiting for de-
 livery.

REED-JOSEPH CO.

WRITE FOR
 DEALER
 INFORMATION

Form _____
 Address _____
 City _____ State _____

GREENHOUSE CROPS

California Tour

GREENHOUSE vegetable grow-
 ers of Cleveland, Ohio, now
 know that California represents
 their biggest competition.

Over the years the Cleveland
 greenhouse growers have held an
 uncontested lead in producing and
 marketing tomatoes out of season.
 Florida was once their greatest
 rival. But after a four-day visit in
 the South three years ago, they realized
 that Florida has its own pecu-
 liar problems and is not as great a
 threat as they had thought.

On their annual tour this year, 24
 Cleveland area greenhouse growers
 with their county agent visited the
 southern California vegetable grow-
 ing areas. Since 1958 California out-
 door tomatoes have been coming to
 eastern markets in a steadily in-
 creasing volume. The Cleveland
 growers decided to investigate the
 source of their competition.

The California tour was made
 possible by the splendid co-operation
 between the Ohio and California
 agricultural extension services.
 Arrangements and contacts in Cali-
 fornia were handled by Extension
 Vegetable Crop Specialist Dr.
 Thomas M. Little, University of Cal-
 ifornia, Davis. His 25 years of ex-
 perience and knowledge of Califor-
 nia agriculture was a big help in plan-
 ning the Ohio growers' itinerary.

Orange County Farm Advisor Al
 Holland crammed a week's tour into
 one morning. Where orange groves
 once flourished, housing develop-
 ments are now taking the best land
 out of production. This is also true
 of vegetable farms planted to toma-
 toes, peppers, asparagus, celery, let-
 tuce, and spinach.

In the Chula Vista district of San
 Diego County the tomato crop was
 of special interest. It was not neces-
 sary for Farm Advisor Bernarr Hall
 to remind Cleveland growers that
 tomatoes grown under hot caps and
 plastic might beat greenhouse crops
 to eastern markets.

Crossing the mountains to Im-
 perial County, the Cleveland tourists
 found that Farm Advisor James
 Breece dealt with a vastly different
 type of agriculture. They learned
 that the killing heat waves in late
 spring in Imperial Valley would
 prevent any threat from that source
 to their greenhouse market.

The valley is below sea level and
 the salt content of the soil is high.
 Rainfall is about 2 inches per year.
 All of the agriculture in the valley



Clarke Martin and Glen Horton, Cleveland area
 growers, examine tomatoes under hot caps.



Cleveland growers saw this pepper planting
 under paper protection in the Coachella Valley.



Imperial Valley tomatoes grow under brush and
 strips of manila paper slanted to the south.

depends on water supplied from the
 All-American Canal, a vital link of
 the Colorado River to this otherwise
 arid valley. Diversion canals bisect
 470,000 acres in much the same man-
 ner as in Holland.

A similar situation exists, the
 growers found, in Coachella Valley
 where H. F. Van Maren is Riverside
 County farm advisor. Fertile fields
 of vegetables, grape vineyards, date
 and grapefruit groves make this
 southern California agricultural
 area one of the country's richest.

First impressions of California

AMERICAN VEGETABLE GROWER

agriculture might indicate that the Cleveland greenhouse vegetable industry days are numbered. But this is not the case when you consider the many problems with which California vegetable growers have to contend. Leading the list is water. The growers depend entirely on irrigation. High soil salt concentration is a big problem. Curly top disease is a threat to the tomato crop.

Cleveland area growers could sympathize with growers in the valley experiencing decline in market prices and with those whose fields might be left unharvested. Farm Advisor Van Maren summed up his growers' marketing philosophy: "All vegetable production is based on earliness. When the seasons are uniform throughout the competitive growing areas, business can be bad." —Fred K. Buscher, Cuyahoga County (Ohio) Agricultural Agent.

AIR-BLAST SPRAYING

(Continued from page 9)

There are, today, many manufacturers and designs of these machines. Unfortunately, as in the developmental stage of any machine, not all applicators are equally efficient. The lack of blower capacity air movement is the most common defect of these machines. Air velocity is substituted for volume of delivery. Another shortcoming is the tendency, on the part of some manufacturers, to recommend a wider swath than the machine is capable of covering adequately under adverse conditions.

The breakthrough in Pennsylvania occurred in 1956 when a serious outbreak of late blight occurred on both tomatoes and potatoes. Growers observed that those who used these machines experienced no more or, in some cases, less damage from the disease than those who used conventional methods of control.

Our experience in Nebraska was also favorable. Potatoes and tomatoes dusted by airplane in the Platte River Valley were seriously infected with late blight in 1958. Tomatoes sprayed with the concentrate mist blower were free from disease. High winds, which are a natural phenomenon on the Great Plains, frequently necessitated evening and early morning applications when the air velocity was lower. Nevertheless, we were able to remain on schedule because of the significantly greater area covered by this method as compared to conventional spraying.

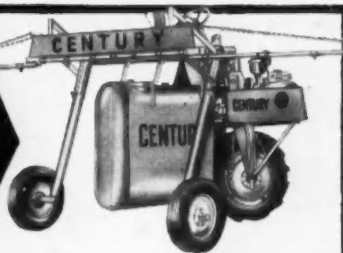
In Texas, our problems were similar. However, good results were obtained on all vegetable crops.

The question frequently asked is, "Why change to this type of applicator when the results are not significantly better than with the conven-

(Continued on page 43)

HIGH CLEARANCE- ALWAYS READY!

**ONE SPRAYER HANDLES
HIGH OR LOW CROPS**



Yes, you can use Century's Self-Propelled Sprayer for all spray jobs on your farm, and make money custom spraying for your neighbors! Century's High-Clearance unit shown above with 8-row heavy duty sprayer and 185-gal. tank is ideal combination for fast weed and insect control in high crops. Use boom in low position for low row crops, small grain, pasture and fence rows. It's always ready and doesn't tie up a tractor.

Send coupon TODAY for complete literature and booklet that tells how to charge for custom work, how many acres you can spray per day and other helpful, money-making facts.

Century NYLON nozzles handle all chemicals, even liquid fertilizer. Boom adjusts from 10 inches to 9 feet for high or low crops. Brake in fixed position, plus many other exclusive features. 18 or 24 h.p. engine. Sickle bar corn topper and other attachments increase usefulness.

CENTURY ENGINEERING CORPORATION
 Cedar Rapids, Iowa Dept. 117-B
 Please send High Clearance Sprayer information.
☐ I am interested in doing custom work.
 NAME _____
 ADDRESS _____
 CITY & STATE _____

Warp's AS LOW AS
COVERALL 1¢ SQ. FT.
POLYETHYLENE

The ORIGINAL Polyethylene Film
For Farm Use*

Made in Clear or Sun-Resistant Black

Seamless Widths Up to 32 Feet

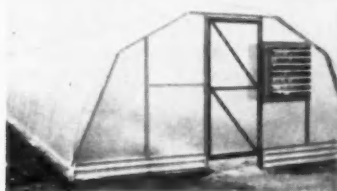
COVERALL is water-proof, rot-proof, acid-proof. Meets FHA specifications. Durable, inexpensive. The Best Polyethylene Sheeting Money Can Buy. Made by Warp Bros., Chicago 51, Ill. — Established 1924.

*Warp's Coverall Was the First Polyethylene To Be Successfully Tested and Used for Silage Covers

VAPOR BARRIER OVER BIRD NETS SEED AND FERTILIZER COVERS MAT COVERS PLANT BED COVERS MACHINE COVERS

Available At All Leading Hardware, Lumber, Implement or Feed Dealers

Replace Your Hot Beds with a Rough Brothers PLASTIC HOUSE



PRACTICAL! VERSATILE! SIMPLE!

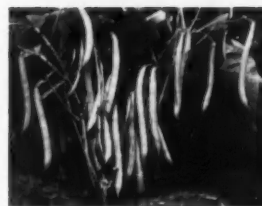
POLYETHYLENE FILM.
 1½ mil., black, in 1000-ft. rolls, 8 ft. wide, \$20.40;
 4 ft. wide, \$27.00.
 2-mil., natural, in 200-ft. rolls, 4 ft. 2 ins. wide,
 \$8.00; 8 ft. 4 ins. wide, \$15.00; 12 ft. wide, \$21.00.
 4 mil., natural, in 100-ft. rolls, 3 ft. wide, \$6.00;
 4 ft. wide, \$8.00; 6 ft. wide, \$11.20; 8 ft. wide, \$14.40;
 10 ft. wide, \$18.00; 12 ft. wide, \$21.60; 14 ft. wide,
 \$25.20; 16 ft. wide, \$28.80; 20 ft. wide, \$36.00; 24 ft.
 wide, \$43.20; 28 ft. wide, \$50.40; 32 ft. wide, \$57.60.
 6 mil. available in widths up to 32 ft.
 10 per cent discount on orders over \$24.00.
 20 per cent discount on orders over \$60.00.
 35 per cent discount on orders over \$6,000 sq. ft.
 We pay freight if check is with order.

ROUGH BROTHERS

4229 Spring Grove — Kirby 1-6180 — Cinti. 23, Ohio
 Manufacturers & Builders of America's
 Finest Greenhouses

When writing advertisers
 please mention
 AMERICAN VEGETABLE GROWER

GOOD SEED BUYS Asgrow Strains



BEANS

Resistant Black Valentine-Contender
 Tenderlong-Tendergreen-Topcrop

SWEET CORN

Golden Security
 Others available in limited quantity

CUCUMBER

Marketer—Long Marketer

Send for complete seed catalog and
 our wholesale price list on Spray
 materials for Gardeners and Orchard-
 ists.

POLYETHYLENE MULCHING ROLLS

have proved their value in cutting labor,
 increasing yields. Ask for prices.

Letherman's

Dept. VG, Canton 2, Ohio

It's Too Soon To Say

Several new wrinkles are being probed at Kansas State University in connection with greenhouse growing that may prove to be of interest to you. Researchers are using rigid plastic roofing panels made of corrugated fiberglass, which have proven to be sturdy and long lasting, and are experimenting with different colored panels, such as white, yellow, green, and clear. Using test plants of all kinds, they are studying the effects



of the various colors on the growth of the plants and also on the behavior characteristics of certain species of insects. The test is to be carried on for three to five years so that complete and exhaustive deductions can be made. If you will write to Don Leach, Butler Manufacturing Co., 7400 East 13th St., Kansas City 26, Mo., he can send you full information about the plastic panels and give you periodic reports on the color test. We, too, are going to keep an eye on this one.

In Only Seconds

In the twinkling of an eye, you can increase your crop yield with the easy-to-use, easy-to-read soil tester being offered to vegetable growers everywhere. Now is the time to make sure your 1960 crop will be a bumper one. The Kelway soil tester gives accurate acidity and moisture readings—both at the same time. It's inexpensive—and pays for itself over and over in just one season. Know when to irrigate, when to fertilize. If you will write to the Kel Engineering & Equipment Co., Dept. VG9, P. O. Box 744, New Brunswick, N. J., I know they will rush all the details about this soil tester to you right away.



New for You

Light As A Feather

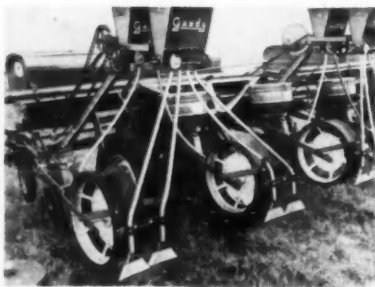
Honestly, it's as light as the picture would indicate—only 22 pounds. It has a brand new, easy starting two-stroke engine and is mounted on vibration shock absorbers. The fan will never wear out from using



abrasive insecticides because the dust bypasses the fan. Growers in California and Florida and in between are really enthusiastic about this new lightweight duster. J. Waldron Scott, Powerpak Equipment Company, P. O. Box 773, Vista, Calif., can tell you all about them.

Brand New For '60

Granular chemicals are becoming more and more important because of the residual factor which means longer and more positive control. A new line of granular chemical applicators for soil insect and weed control has been introduced. The new models include an improved rate-control metering mechanism, a new mounting



bracket for easier and more rigid installation, and heavy duty stabilizer braces, adjustable to fit all planters. All the models can be used for either weed or insect control or tandem mounted to do both jobs at the same time. Write to E. S. Gandrud, Gandy Company, 90 Gandrud Rd., Owatonna, Minn., for the complete story.



The ABC'S Of It

Growers have told me they don't quite understand just how air carrier sprayers work. Here, in booklet form, is the best answer to that question I have ever seen. It's interesting, informative, and easy to read. It tells why outside rows need special attention, the importance of spray droplet size, how to spray in cross winds, how to fight frost with an air sprayer, and much more. Free copies are available simply by writing M. Shine, Besler Corporation, 4053 Harlan St., Emeryville, Oakland 8, Calif.



Big Performance

A new line of small sprayers that deliver extra big performance are now available. We have used one on our experimental farm and it's done a wonderful job. The sprayers are built in 15-, 25-, and 50-gallon size and have 4-piston pumps delivering 5 gpm at pressures up to 400 pounds. The tanks are all plastic lined, have large filler openings, and are powered by Briggs & Stratton engines. Write Harold Skibbe, Skibbe Manufacturing Company, Sodus, Mich., for full information about these new sprayers.

AMERICAN VEGETABLE GROWER

WET or DRY?

it's local option with



RAIN BIRD SPRINKLERS

Rain Bird sprinklers get the farm vote every time because they offer the finest irrigation possible with a minimum of maintenance.

Rain Birds' platform offers you "Weather to order"



and their record shows they produce double—even triple—yields. You can depend on Rain Birds—backed by 24 years of success. There's a Rain Bird model for every irrigation requirement... under-tree, level land, hillside... high pressure, low pressure, etc.

REMEMBER,

if it hasn't the name, it isn't the same! Specify RAIN BIRD!

See your Rain Bird dealer or write for literature.



**WESTERN
RAIN BIRD SALES**
627 No. San Gabriel Avenue
AZUSA, CALIFORNIA

AIR-BLAST SPRAYING

(Continued from page 41)

tional sprayer?" The answer lies in the following factors:

1) A 75% saving in water. Instead of applying 150 gallons per acre at each application with the conventional sprayer, only 37½ gallons are needed—a saving of approximately 600 gallons of water per acre for a normal spray program.

2) Saving in labor and time. Growers report that they can spray up to three times as many acres per day with 50% less labor.

3) Applications can be made in the evening or at night when the foliage is wet.

4) Less trouble with nozzle clogging and elimination of boom breakage.

5) Fields can be covered more rapidly. This allows growers to cover their fields more frequently during rainy seasons when serious disease

This system of disease and insect control has many advantages. There are also certain disadvantages: Adverse effects of strong air currents disturbing the uniform flow of material over the entire swath pattern; high initial cost of equipment; and lack of uniformity in deposit of spray material over each row. THE END.

AMERICA'S MOST USEFUL



- PORTABLE
- NYLON-ROLLER BALL BEARING PUMP
- SPRAYS DIRECT FROM CONTAINER
- YOUR BEST VALUE AT THE BEST PRICE

Save time and money with New Power Aerosprayer. Its one-man portability lets you do a quicker spraying job. Ideal for trees, gardens, and cattle. Operates from ground, truck, or any solid base. Satisfaction guaranteed.



THE ORIGINAL AIROSPRAYER
Spraying made easy with an Aerosprayer, still the finest slide sprayer on the market.

Attach This Order to Letter or Card with Name and Address

- Send me an Aerosprayer (\$8.40 east of Denver, \$8.75 west, ppd. or C. O. D. plus charges).
- Send me Power Aerosprayer (\$139.95 complete with 2 h. p. Briggs & Stratton engine, F. O. B. Neodesha, Kansas).
- Send me additional information on Aerosprayer Power Aerosprayer.

AIROSPRAYER COMPANY

DEPT. V

NEODESHA, KANSAS

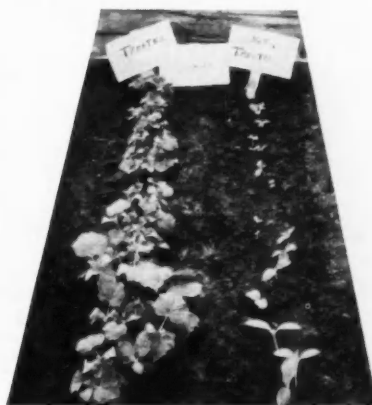
Research discovers seed treatment for better, more profitable crops

"In many trials the proof of the spectacular results of Power-Pak treatment is reflected in increases of up to 100% in germination and stands," reports Dr. Stuart Smith, Director of Research, Seed Research Specialists, Inc., at the laboratories in Ames, Iowa.

"In addition the fast, vigorous growth from Power-Pak treated seeds provides yields even under adverse conditions where other seeds with the standard seed treatment failed."

At the southern trial grounds in Homestead, Florida, Dr. Smith said, seed treated with Power-Pak showed good germination and emergence despite heavy rains and cold temperatures this past winter.

"Our plots were treated with this



Spectacular results of seeds treated with Power-Pak, developed in the research laboratories of Seed Research Specialists, Inc., are graphically illustrated here. Note the heavy growth in the cucumber plants (left) in the row in which seeds were treated with Power-Pak, and the weak row of seedlings in which this treatment was withheld.

exclusive formula while others in the area were not," Dr. Smith said. "Stands on Seed Research Specialists sweet corn, for example, ranged from satisfactory to perfect, while some of the other plots gave less than half a stand. I have never witnessed such a striking advantage for seeds treated with Power-Pak."

All seed bred and grown by the six breeder divisions in the vegetable field who make up Seed Research Specialists, Inc., are now treated with Power-Pak before being packaged in their hermetically sealed cans or Flexicartons.

FREE—Send us a card for your free subscription to The Seed Specialist, filled every month with authentic facts and features for the commercial vegetable grower. Write: Seed Specialist, Box 3091, Modesto, Calif., U.S.A.

SEED RESEARCH SPECIALISTS, INC., P.O. 3091, Modesto, California, U.S.A.

GROWERS OPPORTUNITY PAGE

Only 25¢ a word for one-time insertion; 20¢ a word per month for two-time insertion; 15¢ a word per month for four times or more. CASH WITH ORDER. Count each initial and whole number as one word. Copy must be in the 15th of the second month preceding date of issue. You can use our companion publication, AMERICAN FRUIT GROWER, in combination with AMERICAN VEGETABLE GROWER, for only 10¢ a word more.

AGENTS WANTED

WANT EXTRA MONEY? TAKE BIG PROFIT orders in your spare time accepting subscriptions for AMERICAN VEGETABLE GROWER. Send for free credentials and tested-method sales kit. No obligation. Write today. AMERICAN VEGETABLE GROWER, Box 109, Willoughby, Ohio.

BEEES

BEEES INCREASE SEED AND FRUIT yields, require little attention. Big profits. Sting-proof equipment. Factory prices save 25%. Free advice from experienced bee men. Free catalogue. WALTER T. KELLEY CO., Clarkson, Kentucky.

BOOKS

THE HOW-TO BOOK ON STRAWBERRIES. The layman's primer, the professional's reference and everyone's factual guide to more and better strawberries. \$1.50. AMERICAN VEGETABLE GROWER, Box 107, Willoughby, Ohio.

DRUG MEDICINES DISAPPOINT, DISILLUSION. Why defeat nature's spontaneous recovery efforts? New 25¢ book, MEDICINES OF NATURE describes seven universal curatives freely available everywhere. M-PRESS, Coalmont 143, Tennessee.

BERRY BOOK: "THIRTY YEARS OF BERRIES." Raspberries and Strawberries. 84 pages. Price \$1.00 Ppaid. ROY TURNER, 1525 S. Livingston St., Peoria, Ill.

TOMATO GROWERS—STILL AVAILABLE a few copies of our 1958 edition at special price of \$1.00. First come, first served. AMERICAN TOMATO YEARBOOK, Box 540-A, Westfield, New Jersey.

POTATO GROWERS—JUST PUBLISHED 1960 American Potato Yearbook. Crammed with important facts. Send \$2.00. Complete Volume 1950-1960, \$14.00. AMERICAN POTATO YEARBOOK, Box 540-A, Westfield, New Jersey.

BUCKET OF MONEY, EXCITING SHORT novel of Negro life on Louisiana sugar plantation in the days of Huey Long, \$2.50 postpaid. HUBERT MADERE, Hahnville, Louisiana.

THE GOLD REPORT SAYS, "IT MUST GO higher. So, convert your money to gold, now 1934 price. Store out of country. Use 97% loan value to double claim." Safe legal profit plans, \$3.00 to HAYES, Box 3455F, Chicago 54, Ill.

BRUSH & WEED KILLERS

KILL BRUSH AT LOW COST WITH AMAZING R-H BRUSH RHAP. Will not injure grasses, grains; not poisonous. For free information, write REASOR-HILL CORPORATION, Box 36AV, Jacksonville, Arkansas.

KILL SUBMERSED WATER WEEDS WHICH foul up motor propellers, tangle fishing gear, with R-H WEED RHAP-20. Granular 2,4-D. Inexpensive, easy to use, sure results. For free information, write REASOR-HILL CORPORATION, Box 36 AV, Jacksonville, Arkansas.

KILL BITTERWEEDS, WILD ONIONS AND dog fennel with R-H WEED RHAP. Low cost. Will not injure grass, grains; not poisonous. For free information, write REASOR-HILL CORPORATION, Box 36AV, Jacksonville, Arkansas.

BUSINESS OPPORTUNITIES

FREE PICTURE FOLDER, "HOW TO MAKE \$1,000 Yearly, Sparetime, Raising Earthworms!" OAKHAVEN-25, Cedar Hill, Texas.

EARN CASH FROM STRAWBERRY SALES! Get our How-To Book on Strawberries that gives common sense treatment of the must and must-not in strawberry culture. Fully illustrated. \$1.50. AMERICAN VEGETABLE GROWER, Box 107, Willoughby, Ohio.

GREENHOUSES FOR SALE: 10,000 FEET covered, pond, modern home on state highway near St. Louis, \$16,500. On terms. SUNRISE GARDENS, Marissa, Ill.

61 ACRES, WILLAMETTE VALLEY. 17 acres fruit, mostly cherries. 12 acres garden truck. Long established fruit stand. 2 houses. \$31,000. Terms. GOIN'S FARM, Jefferson, Oregon.

FOR SALE—EQUIPMENT & SUPPLIES

BE READY FOR NEW BUSINESS WITH attractive signs. It's easy and inexpensive using SIGNCRAFT letters. Last for years and save money. Up to 48" NORTLAND PRODUCTS Route 22-282, Rockland 25, Maine.

LARGEST STOCK OF NEW MYERS SPRAYERS and used sprayers in Ohio. Contact us for your requirements. WATER SUPPLIES, INC., P.O. Box 547, Ashland, Ohio.—Phone 21565.

SIX-ROW ARIENS TILLIVATOR WITH OR without A.C. Model G Tractor, 6-row A.C. vegetable cultivator, new Clarksville hydro-cooler, new 4-unit Planet Jr. seeder, 32-foot tandem axle refrigerator trailer, 10,000 tomato hampers, Bean root crop washer, 4-foot Olson Roto-Beater, Hahn Hi-Boy corn shayer. De VRIES FARMS, Blue Island, Illinois.

3 H.P. SICKLEBAR MOWER SPECIAL \$69.00. Old reliable make. Retail value \$139.00. Write UNIVERSAL MFG., 324 West Tenth, Indianapolis 2, Ind.

TOMATO GRADERS—CUSTOM BUILT. FOR small, medium or large growers. Complete graders from \$268 up. Contact your local dealer or write, CARDINAL & ELLIS, Belding, Mich.

FOR SALE: FRIEND—NX PUMP—15 GPM. Completely reconditioned—\$125.00. ARCH'S IMPLEMENT & SUPPLY, Swamp Road, Hartsville, Ohio.

JOHN BEAN SPRAYERS, KWH MIST blowers, FMC graders, washers, packing house equipment, Shur-Kane Sequa-Matic irrigation, power and hand pruning tools, supplies, parts and service. NORTHEASTERN OHIO'S JOHN BEAN DEALER, LANPHEAR SUPPLY DIVISION OF FOREST CITY TREE PROTECTION COMPANY, 1884 S. Green Road, Cleveland 21, Ohio. Phone EV 1-1700.

JOHN BEAN MIST SPRAYER AND DUSTER in first class condition. Good tires and new battery. Ready for immediate use. THE SHADE TREE SERVICE, 963 Park Place, Decatur, Illinois, Phone 8-3968.

JOHN BEAN BRUSHER AND CLEANER: John Bean brusher and waker, both for \$500.00. SCHMIDT BROS., R. 3, Swanton, Ohio, phone 3671.

MODEL 36 JOHN BEAN SPEED SPRAYER, rebuilt and repainted. Four P.T.O. Hardies, 18-35-50 G.P.M., 200-500 tanks. Three 42" Potato-Tomato Booms. MARVIN FAETH SPRAYER & EQUIPMENT CO., Fort Madison, Iowa.

30" GRABILL COMPLETE GRADING LAY-out. Two used cider presses. 700-gallon supply tank on duals. Large pre-fab cooler and units. MARVIN FAETH SPRAYER & EQUIPMENT CO., Fort Madison, Iowa.

HICLEARANCE CORN SPRAYER 8-ROW hydraulic boom. Like new. EDWARD C. WHEELER, North Reading, Mass.

I. ALLIS CHALMERS G TRACTOR WITH transplanter and liquid starter attachment, cultivators, opening plow, 2 Planet Jr. seeders, 2. Carter irrigation pump with Chrysler Industrial engine, 3. Niagara 14" nozzle duster, 4. Farquar Iron Age corn planter. Priced to sell. Need cash quickly. CHAS. ARMITAGE, Star Route, Spring Church, Penn. GR 2-7500.

HAND TRANSPLANTER—SETS VEGETABLE and strawberry plants. \$4.95. HOCKER'S, Grass Lake, Michigan.

GARDEN TRACTORS

BUY AT DISCOUNT. NATIONALLY KNOWN garden tractor. Eliminates all hand hoeing, also tills. Thousands satisfied users. Patented. Discount catalogue FREE. AUTOHOE, DePere 8, Wis.

GEESE AND DUCKS

WEEDER GOSSINGS, \$85.00 PER 100. PILGRIM GOOSE FARM, Williamsfield, Ohio.

GLEASON-SWEET POTATO PLANTS

GUARANTEED. IMPROVED PORTORICOS 200—\$1.00; 500—\$2.00; 1,000—\$3.50. Tennessee Nancy Halls, Red Yams, Georgia Reds, "Vineless" Portoricos, Gold Rush, Red Golds, Yellow Yams, 200—\$1.25; 500—\$2.50; 1,000—\$4.00. Quantities much cheaper. FREE Growers Guide "Growing Potatoes Everywhere". STEELE PLANT COMPANY, Gleason, Tennessee.

HAIR CARE

GRAY HAIR RESTORED TO THEIR NATURAL color, this liquid stops falling hair and rids dandruff. \$2.00. Postpaid. FENDRICKS, 114 N. 6 St., Allentown, Penna.

HOTBED SASH

REDWOOD HOTBED SASH—SIZE 3 FT. x 6 ft. \$5.50 each, not glazed. Size 3 ft. x 4 ft. \$3.30 each, not glazed. Size 2 ft. x 4 ft. \$2.20 each, not glazed. GLASS FOR HOTBED SASH—10 x 12, 60 Lts. D. S. \$8.40 Box. 10 x 14, 51 Lts. D. S. \$8.40 Box. YOHO & HOOKER, Box V. G. 1165, Youngstown, Ohio.

ICE EQUIPMENT

NEW AND USED ICE CRUSHER SLINGERS bought and sold. Also complete line of ice handling equipment and tools. Write for free catalogue. INDEX SUPPLY COMPANY, 612 Indiana Avenue, La Porte, Indiana.

INCUBATORS

INCUBATORS FOR BANTAMS AND GAMEBIRDS. All sizes. Write WILL SCHADT, Box H, Goshen, Indiana.

MISCELLANEOUS

BANANA PLANT. GROWS ANYWHERE—Indoors, outdoors. \$1.50. Postpaid. SOPHIA SULEN, Ladylake, Fla.

SUBSCRIBE TO GOVERNMENT SURPLUS weekly. Lists all sales. Buy jeeps, trucks, boats, tents, tires, etc., direct from government. Next 10 issues \$2. GOVERNMENT SURPLUS, Paxton, Illinois.

FREE—AUTHENTIC RESEARCH DATA ON greenhouse and vegetable growing operations—rejuvenation of sterilized soils—balanced seed beds for optimum growth and disease inhibited plants—used by commercial growers in 23 countries—world proven and tested—CLAIR W. STILLE, 137 Bassett Avenue, Lexington, Kentucky.

DRESSES 29¢; SHOES 59¢ MEN'S SUITS \$5.98; Trousers \$1.38. Better used clothing. Free catalog. TRANSWORLD 164-CA, Christopher, Brooklyn 12, N.Y.

DIPPER GOURDS 20 SEEDS \$1.00. BUSHEL gourds 5 seeds \$1.00. JOSEPH HOWARD, Route 1, Hartford, Ky.

500 BUTTONS, FANCY, SETS, 4 HOLE, ETC. \$1.00 postpaid. FREE gift. Catalog with immediate orders. CARD'S WHOLESALE, Edgewood, Niagara Falls, N.Y.

OF INTEREST TO WOMEN

SEW APRONS AT HOME FOR STORES. No charge for material to fill orders. In our fifth successful year. Write: ADCO MFG. CO., Bastrop 63, Louisiana.

KANGAROO PIN CUSHION WITH 36" built-in baby kangaroo tape measure. 7" plush—cute—\$1.00 ppd. NOVEL ITEMS, Box 212, Park Ridge, Ill.

PERSONALS

PRACTICE DAILY BIBLE READING.

PRINTING

PRINTED LETTERHEADS, ENVELOPES, billheads, shipping tags, etc. WM. EVENDEN, 1992 East 17th Avenue, Eugene, Oregon.

ROTARY TILLERS-SALES, SERVICE

AMAZING GERMAN IMPORT. PROFESSIONAL self-propelled AGRIA tiller with 3 speeds. Easiest handling tiller on the market. 4" to 16 1/2" cut. Only \$269.00, FOB Cleveland for 16 1/2" width. Other sizes to 36" with 12 HP diesel motors. Dealer inquiries invited. GORMSEN TILLER, Strongsville, Ohio, Center 8-6466.

SALESMAN

OR SALES TRAINEE FOR WELL KNOWN progressive corrugated company to call on fruit and produce growers. Complete sales training program. Salary plus incentive and expenses, based on ability and experience, leased car. Prefer college graduate with farm or produce background. All replies confidential. Reply Department B, Box 116, AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

SEEDS AND PLANTS

TOMATO PLANTS Virginia State Inspected Cabbage, Broccoli, Cauliflower Ready Now Tomato, Pepper, Sweet Potato Ready May 20	CABBAGE PLANTS Ready Now Tomato, Pepper, Sweet Potato Ready May 20
TOP QUALITY Write or telephone for catalogue and prices. J. P. COUNCIL COMPANY Logan, 23346 Franklin, Virginia "Virginia's Oldest and Largest Growers"	

AMERICAN VEGETABLE GROWER

ONION PLANTS

WHOLESALE PRICE LIST—
ORDER TODAY
OUTDOOR-GROWN PLANTS READY NOW
 Onions, 4 popular varieties \$4.95 per crate
 Crystal Wax — Yellow Bermuda
 White Spanish — Yellow Spanish
HYBRID Onions, Yellow & White 6.95 per crate
 New Cal-Red onions 6.95 per crate
 60 Bunches per crate, 75 to 100 lbs. per bu.
 State Inspected. Shipped by express.
EHLERS BROS. PLANT FARMS
 Box 231, Uvalde, Texas

NEW CROP STRAWBERRY PLANTS DOUBLE State inspected. Dunlap, Blakemore and Klonmore \$5.00 thousand. Robinson \$7.00, Tenn Beauty, Premier and Empire \$8.00, Dixieland \$9.00, Gem and Superfection \$12.00, Streamliner \$15.00. Collect. All \$2.00 per 100 postpaid. Prompt shipment. Phone Filmore 4-6168. **TOM RAMSEY, Harrison, Tenn.**

ASPARAGUS SEED, 1959 CROP, SELECTED, healthy and strong variety producing 58% jumbo spears. Over 83% certified germination test. Harvested and cleaned by hand. Tested against disease. **GEMERLING FARMS, Inc. Massey, Maryland.** Phone: Waverly 8-3253-3202.

CERTIFIED STRAWBERRY PLANTS grown on virgin soils. Blakemore \$5.00 thousand. Dunlap Fla. 90 \$6.00, Premier, Robinson, Tenn Beauty \$8.00, Dixieland, Empire, Sparkle \$10.00, Pocahontas, Gem Everbearing \$12.00. **SMITH BERRY GARDENS, Ooltewah, Tenn.** Telephone Chattanooga FI 4-6758.

PEPPER PLANTS — YOLO A AND YOLO — Seeds treated with Bi-chloride of Mercury. Extra large. Georgia Certified. For further information, call **FARMERS PRODUCE AND SUPPLY CO., Swedesboro, N.J.**

HARDY GARDEN CHRYSANTHEMUMS, 200 popular varieties. Catalog free. Special offer 20 plants, \$2.45 postpaid. **ELM TREE PERENNIAL FARM, Southington, Connecticut.**

ASPARAGUS PLANTS: MARY WASHINGTON 3 years old, \$3.50 per 100. And Martha Washington 2 years old, \$3.50 per 100. Plus shipment. **RT DOLPH SZEWCZYK, #3, Paw-Paw, Michigan.**

GLADIOLUS—SELL BLOOMS For 75¢-\$1.00 per dozen. Wonderful family income project. Send us \$4.50 for 2,500 bulbs (20¢ doz.). Long season collection. Leading commercial varieties. **GEO. L. McCLURE & SONS, Normal, Ill., 34th year specializing in Gladioli.**

VEGETABLE PLANTS

Certified by State Inspection. Open field-grown CABBAGE, ONIONS, TOMATOES, PEPPER, COLLARDS, BROCCOLI, BRUSSELS SPROUTS, CAULIFLOWER, EGGPLANTS, AND SWEET POTATOES. We plant the best strains of seed in leading varieties. Write for free catalog of prices and descriptive varieties.

TEXAS PLANT FARMS

Jacksonville

Texas

500 ASSORTED SWEET ONION PLANTS \$2.00. Postpaid. Fresh from **TEXAS PLANT COMPANY, Farmersville, Texas—“Home of the Sweet Onion”.**

PEPPER & CERTIFIED TOMATO PLANTS. Leading varieties. Mr. Grower start with the best. Try our field grown tested plants for results. Any quantity. Write for prices. **BELL PLANT FARMS, Ashburn, Georgia.**

BURPEE'S “BIG BOY”; “MORETON” Hybrid tomato plants. Live delivery guaranteed. 15¢-51¢; 50¢-84¢ postpaid. Advise delivery date. **FRANCIS PETRIE, Route 1, Hopkins, South Carolina.**

VERY SPECIAL! CERTIFIED NO. 1 RASPBERRY canes Newburg and Viking, per 1,000, \$40.00; per 10,000 or more, \$35.00 per 1,000, packing free, f.o.b. Montreal, subject unsold. **W. H. PERRON & CO., LTD., 515 Labelle Blvd., L'Abord-a-Plouffe, (Montreal 40), Canada.**

SWEET POTATOES—PORTORICANS, 200-\$1.00; 500-\$2.00; 1,000-\$3.50; 5,000-\$16.75; 10,000-\$30.00. All Golds, Nancy Halls, Gold Rush, Bunch Portoricans 50¢ extra per 1,000. Prompt shipment, superior quality. Planting guide free. **VERNON DUNN, Gleason, Tennessee.**

SITUATION WANTED

NEED WORKERS? HARD WORKING FARMERS and ranchers (men only) from Mexico's cool highlands want permanent year around U.S. jobs. Allow three months for worker's arrival. For free information, Write: S. D. CORONA, Office 17-K, Morelos 516, Guadalajara, Mexico.

WILLS

MAKE YOUR WILL! TWO WILL FORMS \$1.00. NATIONAL, Box 48313P, Los Angeles 48, California.

MAY, 1960

MORE FOR YOUR MONEY

Tractor, Grader, Implement, Airplane, Farmwagon and Wheelbarrow Tires Available. Satisfaction Guaranteed. Thousands of New and Used Army Surplus Tires in Excellent Condition.



SPRAYER TIRES
 1600x16 \$77.50
 14 ply new 1st nylon
NEW TUBES \$22.50

TRUCK TIRES TUBELESS
 TAKEOFFS APPROX. 90-95% OF
 THE ORIGINAL TREAD AT
 TREMENDOUS SAVINGS

7.17.5	6 ply	\$25.00
7.22.5	8 ply	30.00
8.17.5	6 ply	30.00
8.19.5	8 ply	35.00
8.22.5	8 ply	40.00
8.22.5	10 ply	45.00
9.22.5	10 ply	50.00
10.22.5	10 ply	60.00
11.22.5	12 ply	70.00

9.22.5 12 ply new Rock Lug \$60.00

750x18 8 ply
 New Retreads \$24.50

ARMY TYPE EXTRA
 HEAVY TREAD
 Good for mud & rough going
 Perfect condition. Used

750x16—6 ply Jeep	\$17.50
750x20—8 ply and tube	17.50
900x16—8 ply and tube	17.50
825x20—10 ply and tube	35.00
900x20—10 ply and tube	25.00
1100x20—12 ply and tube	32.50

WAGON TIRES
 PERFECT CONDITION

700x16 6 ply Used and
 New Tube \$10.00
 750x16 8 ply Used and
 New Tube 11.00
 All Sound—Ready to Run

USED
TRUCK TIRES

Excellent Cond.—Grade #1
 Regular Tread
 400x20 6 ply \$14.50
 450x20 8 ply \$17.50
 750x20 10 ply \$17.50

SPECIAL OFFER!

FRESH STOCK. Not surplus. Good for Mud & Heavy Loading.
 600x16 6 ply New Army Tread. \$23.50
 700x16 6 ply New Army Tread. \$28.00
 800x16 6 ply New Army Tread. \$45.00
 900x16 6 ply New Army Tread. \$45.00
 825x20 10 ply New Heavy Army Tread, 1st \$37.50
 900x20 10 ply New 1st on the Road off the Road \$62.50

New Regular Tread Specials

NYLON
 825x20 10 ply 1st \$59.50
 900x20 10 ply 1st \$69.75
 1000x20 12 ply 1st \$88.00

NEW TRUCK TIRES

Tremendous Savings
 Regular Tread 8 ply 1st \$28.00
 700x16 8 ply 1st 24.50
 800x16 8 ply 1st 32.50
 750x20 8 ply 1st 48.00
 1100x20 12 ply 1st 60.00
 1100x24 12 ply tire & tube 87.50
ROAD LUG TYPE TREAD
 750x16 army tread & tube \$24.50
 1000x20 12 ply 65.00
 1100x20 12 ply nylon 75.50
 1100x24 14 ply 1st & tube 87.50

USED TRUCK TUBES

650x20 700x20 \$2.50
 750x20 750x16
 AIR TIGHT
 Larger Sizes \$4.00

NYLON AIRPLANE TIRES FOR CONVERSION

WAGON SPECIALS

650x14 12 ply Hi-Tread. Perfect condition—No Recalls. \$17.50
 READY TO MOUNT ON YOUR HUB
 JUST SPECIFY TYPE OF WAGON
 LOWER—WIDER—STRONGER
 • 5000 lbs. cap. per tire
 • 26" high • 6 1/2" wide
FULLY GUARANTEED

1700x16 12 ply used excellent.....\$35.00

FOR WAGONS—TRUCKS

750x16 (32x8) 10 ply new \$27.50
 32x8 10 ply New Retreads \$18.50
PERFECT REPLACEMENTS FOR
16" WAGON—TRUCK TIRES
WILL FIT DROP CENTER
OR TRUCK WHEELS
 36" used sprayer tires \$12.50
 • 26" h x 12" wide • 16" dia.
 800x16 (34x8) • 12 ply new \$30.00
 34x9 USED EXCELLENT \$14.50

MANURE SPREADER

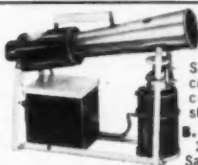
Used Traction
 Treads
 750x20 \$15.95
 900x20 \$20.00

GANS SURPLUS TIRE CO.

Mail Orders Filled No C.O.D.
 Send Check or M.O.

Dept. B Phone
 1003 Broadway Chelsea
 Chelsea 50, 3-2078
 Mass. 3-2035

DEALERS
WANTED



ZON SCARECROW

Stop bird damage to all crops for less than the cost of one shotgun shell per day! Price \$59.50

B. M. LAWRENCE & CO.
 244 California Street
 San Francisco 11, Calif.

VEGETABLE PLANTS

—all leading varieties of Cabbage, Tomato, and Pepper. All plants State inspected and unconditionally guaranteed to arrive to you in usable condition. Write for free color catalog.

LEWIS TAYLOR FARMS

Route 1

Tifton, Georgia

DEPENDABLE, SAFE, LOW COST PLASTIC GREENHOUSE HEATERS



LP or Natural Gas

HE.000 or 33,000 BTU input
 Rugged construction (aluminumized steel) (no rust)
 100% safety pilot-automatic control
 Directional heat flow
 Blower attachment available
 Being used with outstanding results
 Free greenhouse plans sent on request



Blower Attachment

WRITE

BURLEY BURNER CO., Inc.
 2417 Nicholasville Pike Lexington, Ky.

TESTS SOIL IN SECONDS!

INCREASE YOUR CROP YIELD



with the easy-to-use, easy-to-read **KELWAY SOIL TESTER!** No complicated chemicals, no time consuming tests. This revolutionary, scientific device gives immediate, accurate acidity and moisture readings. Used by farmers, agriculturists, nurserymen. Fully guaranteed! Price—only \$28.50, pays for itself many times over in one season. Send to: **KEL ENGINEERING & EQUIPMENT CO., Dept. V6-1, P. O. Box 744, New Brunswick, New Jersey.**

NEW

SKIBBE PRESSURE SPRAYER



Available in 3 point mount and trailer models. Big sprayer performance at low cost. Features piston pump, plastic coated tank, exclusive adjustable booms. Sizes from 15 to 200 gallons.

Write for literature

SKIBBE MFG. COMPANY
 Sedus, Michigan

Vegetable Disease Control—1970 Style

ARDEN F. SHERF, Cornell University's discerning plant disease specialist, foresees an easier day coming in vegetable disease control. He forecasts that within 10 years, the vegetable grower will be using radically new methods of handling vegetable diseases.

Beset with blights, wilts, scab, yellows, and mildew, the vegetable grower no doubt has a "show me" attitude. Printed below is Sherf's forecast prepared exclusively for *AMERICAN VEGETABLE GROWER*. We feel sure you will be impressed by the facts on which it is based. This isn't science fiction, it's just around the corner for you and your neighbor.

In the 1970's we will see better vegetable varieties with high resistance or immunity to diseases combined with high eating quality and attractive appearance. The world bank of vegetable germ plasm with disease resistant genes has been barely tapped. The continuing efforts of plant breeders, pathologists, and entomologists will bring forth well adapted varieties with resistance to our most troublesome pests.

Late blight of potato and tomato, verticillium and fusarium wilt of tomato, bacterial blight of bean, cabbage yellows, scab and mosaic of cucumber, lettuce and carrot yellows, are just a few diseases that may be greatly reduced when the new varieties become available.

Systemic fungicides—Most of the chemicals used in 1970 to control fungus, bacterial, and virus diseases of vegetables will act systemically. This will remove the need for repeated applications during the growth period and will also mean that 15 to 20 gallons of liquid will replace the 100 to 150 gallons now required for total coverage. Partial coverage of a leaf will allow sufficient chemical to be taken up and transported in the plant sap to the roots, stems, and other leaves to provide protection.

Perhaps soaking the seeds in the chemical before planting will get enough of the chemical into the young plant to protect it against disease until partially grown, when a final spray could be put on.

All purpose concentrates—Fungicide-insecticide chemicals will be combined into a single concentrated mixture for use on a single crop. For example, an 8-ounce capsule of chem-

ical A is all that will be needed for protection against diseases and insects bothering cucurbit crops whereas one of chemical B will be required on tomatoes, potatoes, and other vegetables. Simplification of chemical recommendations is certain to come.

Soil chemical treatments—Multi-purpose chemicals will be widely and easily used in 1970 for control of weed seeds, soil insects, and soil-borne disease organisms. Chemicals such as Vapam, VPM, and Mylone are already available and are finding limited usage. New formulations and application techniques will make similar chemicals more economical and efficient to use. The increasing adoption of raised bed culture will facilitate the use of such chemicals as preplanting or post-planting treatments.

Newly developed planting equipment and appropriate chemicals will enable a grower to economically treat a furrow or band five to seven days before planting to kill weeds, insects, and fungi in the soil and then later to deliver certain chemicals in the furrow with the seed. This will provide later protection to the seedlings. This day is nearly here now and we may not need to wait for 1970 to roll around before this method can be used.

New methods and equipment for fungicide application—No longer will vegetable growers need to repeatedly spray with 100 to 200 gallons of fungicide solution per acre, even on crops with heavy foliage. Not only will low gallonage equipment be satisfactory for systemic chemicals, but

new methods of applying fungicides and insecticides will be common.

These include the use of irrigation water as a carrier, either in the furrow or overhead, and the extensive use of aircraft. Since the systemic or internal fungicides will be absorbed through the root system and distributed throughout the plant, the surface irrigation or sprinkler method will distribute the chemicals within reach of the plant roots.

Plant disease forecasting—A new and rapidly expanding field of knowledge in plant disease forecasting will

QUOTE-OF-THE-MONTH

There is no unbelief;
Whoever plants a seed beneath the sod
And waits to see it push away the clod,
He trusts in God!

—Lizzie York Case

by 1970 permit the accurate prediction of threats of forthcoming epidemics. The correlation of long range temperature, rainfall, and relative humidity information with certain micro-climatic data, known to be required for disease epidemics to occur, will permit sporadic use of fungicides.

Today we use a spray schedule because a disease *might* occur. In 1970 we may need to apply them only when known epidemic diseases pose a threat and are predicted to occur. This system is now in partial operation in certain areas of the U. S. for late blight of potato and tomato, blue mold of tobacco, and downy mildew of cucumbers and lima beans.

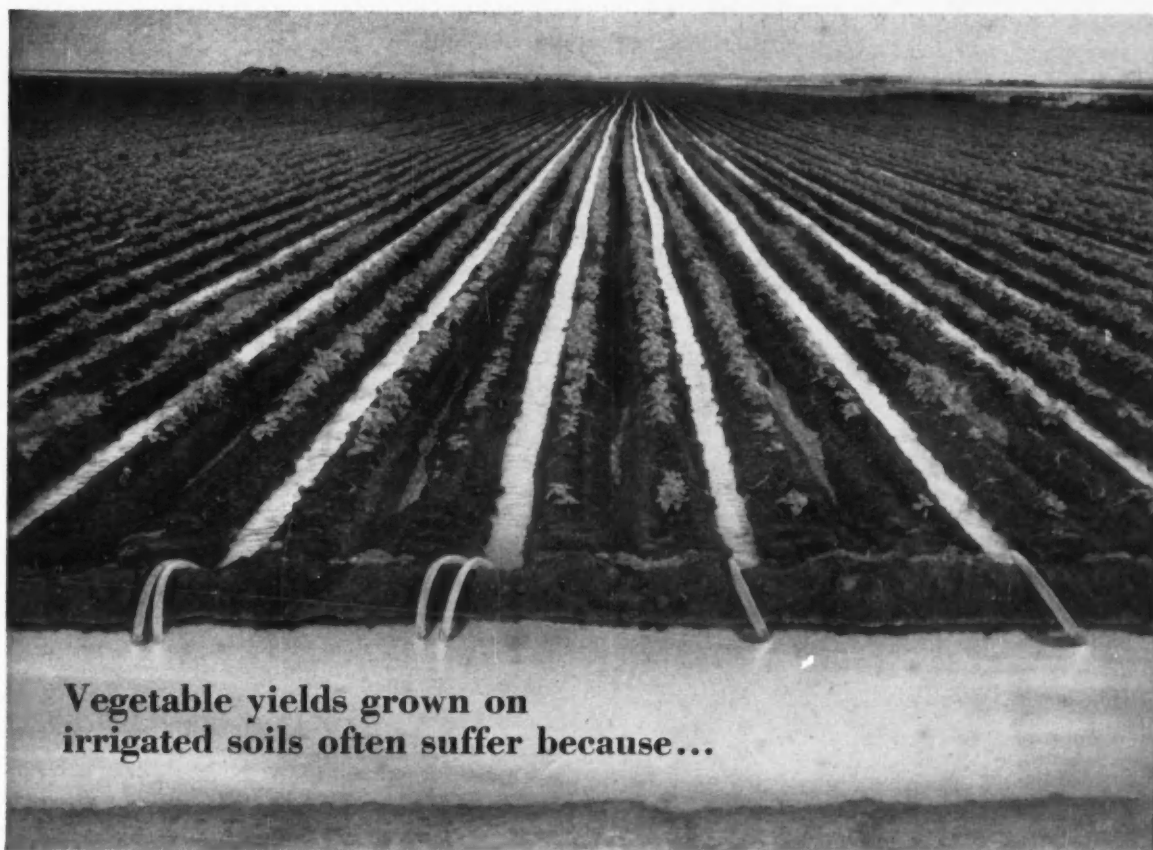
In summary, great changes in methods of controlling vegetable diseases will occur in the next 10 years. Only by keeping up-to-date and adopting many of these new practices will the grower of 1970 be financially successful. Better yields of high quality produce will be attainable with less effort and less cost per crop unit harvested. This achievement will be derived through the joint efforts of commercial, state, and federal research and extension men.

Coming Next Month

Irrigation Issue

- Why Are Nematodes Growing in Importance?
- 22 Reasons for Irrigating
- Wisconsin's Experience with Water Rights
- How to Fertilize Through Your Irrigation System





Vegetable yields grown on irrigated soils often suffer because...

Vital Magnesium Washes Away

The job of keeping an adequate supply of magnesium in the soil has become a serious problem in vegetable growing areas.

One reason for this is *leaching*. Vegetables are usually grown on sandy, porous soil that has poor magnesium holding capacity.

Here's what you can do about it...

You can lick the problem with yearly applications of a complete mixed fertilizer containing *Sul-Po-Mag*. *Sul-Po-Mag* is an excellent source of magnesium and sulphate of potash. It is water-soluble to go right to work. But . . . and this is important . . . *it dissolves at just the right rate to feed crops throughout the entire growing season*. *Sul-Po-Mag* is neutral in reaction and low in chlorine.

Next time you buy mixed fertilizer, look for the SPM seal on the bag. Or better yet, ask for *Sul-Po-Mag* by name. Mail the coupon below for full information.



Look for this identifying Seal of Approval when you buy. It's your assurance of extra-value fertilizer.



Products for Growth*



*Trademark

INTERNATIONAL MINERALS & CHEMICAL CORP.
Dept. AVG-47, Skokie, Ill.

Please send me a free copy of your "Magnesium" booklet which discusses magnesium and *Sul-Po-Mag* for specific crops.

NAME

ROUTE

TOWN STATE

AGRICULTURAL CHEMICALS DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center: Skokie, Illinois



There's an asgrow hybrid for your program

- Golden Security — still the standard for yield and shipping quality
- Calumet — wilt-resistant; highly tolerant of heat and drought
- Asgrow Golden 22 — big ears for early maincrop; resistant to wilt and drought
- Asgrow Golden 60 — big ears, fancy quality for roadside market

Each year more growers plant Asgrow sweet corn than any other brand. You'll find Asgrow hybrids a sound crop investment.

Order now for immediate delivery.



Asgrow Seed Company

Main Office: New Haven 2, Conn.

Atlanta 2, Ga. • Charleston, S. C. • El Centro, Calif. • Elizabeth City, N. C. • Exmore, Va.
Florida, N. Y. • Indianapolis 25, Ind. • Mechanicsburg, Penna. • Milford, Conn. • Oakland
4, Calif. • Patterson, Calif. • Phoenix, Ariz. • Salinas, Calif. • Vineland, N. J.
Texas distributor: ASGROW SEED COMPANY OF TEXAS, San Antonio 11; Hereford; Robstown;
Weslaco

Florida distributor: THE KILGORE SEED CO., Plant City
International Division: ASGROW SEED COMPANY INTERNATIONAL, Milford, Conn., U.S.A.



